THE BOOK OF THE FAIR

An Historical and Descriptive presentation viewed through the COLUMBIAN EXPOSITION at CHICAGO in 1893

by Hubert Howe Bancroft

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Among movements marking the progress of civilization throughout the ages, the World's Columbian Exposition of 1893 will ever stand conspicuous. Gathered there were the forces which move humanity and make history, the ever-shifting powers that fit new thoughts to new conditions and shape the destines of mankind. Here is vitalizing food for men of reflection, for men of action, a wealth of stored experiences which comes to us as an inheritance of the past and a promise of the future.

Just as the London Exhibition of 1851 was thrown into shade by those held later in Paris, Vienna and in London itself, so all were eclipsed by the Philadelphia Fair of 1876. Even on a more magnificent scale was the Paris Exposition of 1889. All these efforts, however, were far outdone by the Chicago Exposition, dedicated in October, 1892, to the great navigator, Columbus, who four centuries ago

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THE
BOOK OF THE FAIR

AN

HISTORICAL AND DESCRIPTIVE

PRESENTATION OF THE

World's Science, Art, and Industry, as Viewed through the Columbian Exposition at Chicago in 1893

Designed to set forth the Display made by the Congress of Nations, of Human Achievement in Material Form, so as the more Effectually to Illustrate the Progress of Mankind in all the Departments of Civilized Life

BY

HUBERT HOWE BANCROFT

Volume One.

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CARL MELCHERS. XCIII.

THE ARTS OF PEACE.

PREFACE

AMONG monuments marking the progress of civilization throughout the ages, the World's Columbian Exposition of 1893 will ever stand conspicuous. Gathered here are the forces which move humanity and make history, the ever-shifting powers that fit new thoughts to new conditions, and shape the destinies of mankind. Evidenced on every side are subordinations of the physical and the enduring supremacy of mind, while ready at hand are all those contrivances of civilization which help to elevate and ennoble man, to refine his tastes, enlarge his ideas, enrich his interests, and further his deliverance from the despotisms of nature. Halos of fresh thought descend and possess us. Questions and ambitions arise, instinct with new powers and new purposes. Objects of beauty meet the eye and illumine the imagination; the aroma of culture fills the air, and knowledge is drawn in at every breath. Here is vitalizing food for men of reflection, for men of action, a wealth of stored experiences which comes to us as an inheritance of the past and a promise of the future—instrumentalities, each having its influence on the social structure, to the greater unity of mind in all that pertains to the happiness of the race. Men are flashes of thought, which come and go; results alone remain. Human nature changes but little, if at all; it is in this laboratory of life, with its enkindling, energizing potency, that are found those realities of progress which underlie the surface polish of society, and which carry all before them.

Obviously, a gathering like this of men and things from every quarter, each country contributing of its best, must promote intellectual activity and physical energy, and accelerate progress in all its departments. As the intellectual and industrial are quickened, so are the moral and æsthetical, the tendency being to enlarge the social ideal, to lessen the evils of isolation, and bring into greater prominence organization in humanity. There is an education which seems perpetually to test the intellectual possibilities of man; an education which comes from the commingling of peoples and the comparison of things, quickening sympathy and promoting harmony in the whole human family; an education for the educated, for the intelligent and studious, who naturally derive the greatest benefit and enjoyment from that intercourse which stimulates thought, and tends to the repression of learned egotism.

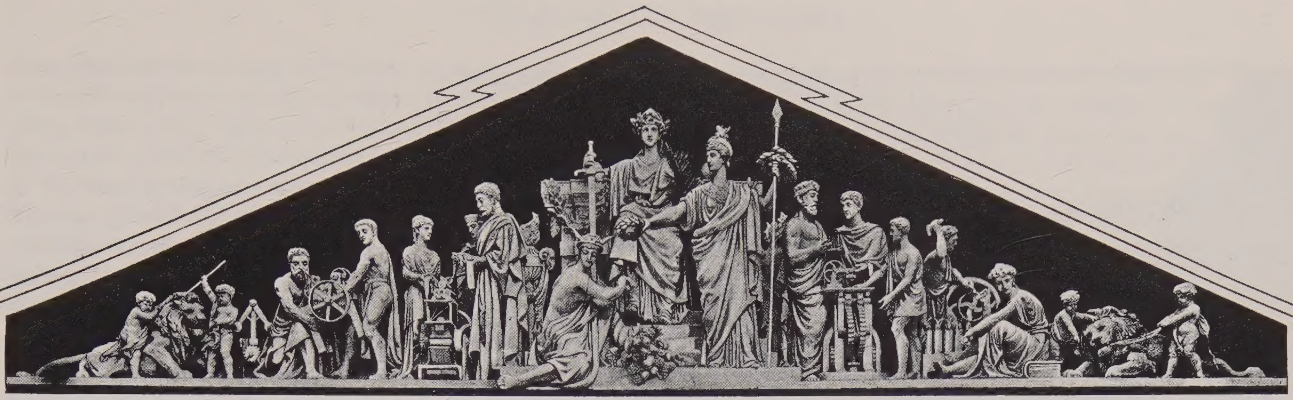
As the work of social reconstruction proceeds, the spirit of unity strengthens, and intellectual supremacy becomes more and more pronounced, for we must henceforth look to social power for our greatest benefits, political power having already bestowed upon us its best.

More than forty years have elapsed since the first of the great world's fairs was opened in London, covering a space of a million square feet, and contained within the walls of a single edifice. At the time it was regarded as a marvellous achievement, an undertaking which would not be again attempted, and certainly would not be excelled for many a year to come. But the success of this exposition, its financial success, its success as an artistic and spectacular display, and as a display of industrial products and mechanical inventions, quickly led to others, each surpassing its predecessor in magnitude, and for the most part in the character of its exhibits. Just as the London Exhibition of 1851 was thrown into the shade by those held later in Paris, Vienna, and in London itself, so all were eclipsed by the Philadelphia Fair, which, on the hundredth anniversary of the nation's birth, introduced a new era in the nation's industries and arts. Even on a more magnificent scale was the Paris Exposition of 1889, the centennial anniversary of the founding of the first republic. All these efforts, however, have been far surpassed by the Chicago Exposition, dedicated in October, 1892, to the great navigator who four centuries ago set foot on New World shores, opening the way for the founding in this western hemisphere of many nations and governments. But though the plan of the present international exposition arose in the desire to celebrate in a proper manner the discovery of America by Columbus, the originating idea was made subordinate to the purposes of progress, and the celebration soon became lost in the exhibition. A hundred years hence it may be this Exposition will itself be deemed worthy of a celebration, and that without other excuse than its merits, for at the Chicago Exposition there is no greater wonder than the Exposition—except Chicago.

During the four decades that have elapsed since the date of the first universal exposition, such marvels have been wrought in the way of industrial, mechanical, and commercial enterprise as have placed the world as many old-time centuries forward in the path of progress. In 1851 there were in the United States but a few thousand miles of railroad and telegraph line. There are now 170,000 miles of the former, and more than that mileage of the latter. Apart from telegraphy the uses of electricity were almost unknown. It is now applied to locomotion, to the lighting of streets and buildings, and to other purposes for which but a few years ago its application would have been deemed impossible. Of still more recent origin are such marvels of inventive ingenuity as the telephone and phonograph. Meanwhile, improvements in mechanical appliances have more than doubled our volume of agricultural and manufactured production, giving to us the means of supplying all Europe with food staples and all the world with manufactured wares. The decades of the past, however, have not proved more prolific of beneficial results to the race than will the decades of the future. Following each one of these throngings of humanity, wherein all men and nations are brought nearer to one another, into closer commercial, political and social relationships, is a general awakening of intellect, and a further polish given to the surface of human affairs.

And as in its ethical influence this industrial display is but little behind its intellectual and material influence, so in the artistic it is but little behind the ethical. If for science and industry an historical panorama like this does so much, for art and the cultivation of the beautiful it will do more. The Exhibition itself, and taken as a whole, is a work of art; in the selection or rather creation of the site, laying out the grounds, and placing the buildings, the artistic instinct was brought into play no less than in the architecture and decorations. Grounds and buildings in their general aspect are things of beauty, and will do more for art in America than a generation of teachings after the ordinary method. Art and architecture are baptized anew in the healthful atmosphere of our great mid-continent. Nothing has been done for a mere display of skill and ingenuity, but everywhere the marvellous is made subservient to the useful and reasonable. Yet in general effect few if any grouped buildings ever presented a more artistic or impressive spectacle, homogeneous and scholarly, being a triumph of the æsthetical no less than of the material.

Of the several world's fairs which have been held, little now remains in the way of description save what has been preserved in books. In due time, their purpose accomplished, most of the buildings of the present Exposition, these splendid edifices which have been reared to science, art, and industry, and to which all the world has made its pilgrimage, will be taken apart, and their contents removed. Then all that will be left of this brilliant spectacle will be in the minds of men and in printer's ink. Many of the beneficial effects will remain, as I have already indicated, in garnered experiences and crystalizations of thought; much will be lost which were well worth preserving. The reproduction and record in book form will exercise an influence for good throughout the centuries. In this age of ideas, which in these splendid displays find such fitting expression, how greatly is civilization indebted to the printer's art, and how important it is that this art should be properly exercised, that the books written should be true to their great exemplar! The writing and publishing of a book which shall attempt to do justice to the subject offers a field for the highest ambition. It should be in the strictest sense a work of art as well as of material and moral instruction, and above all should faithfully reproduce this panorama of the nations, so brilliant and yet so transitory. It is the earnest hope of the author that his task will not prove altogether unworthy of this greatest of human displays, but in some small degree will aid, like the Exposition itself, in promoting a broader sympathy and fellowship in humanity, and enable us somewhat further to fathom the undeveloped might of man.

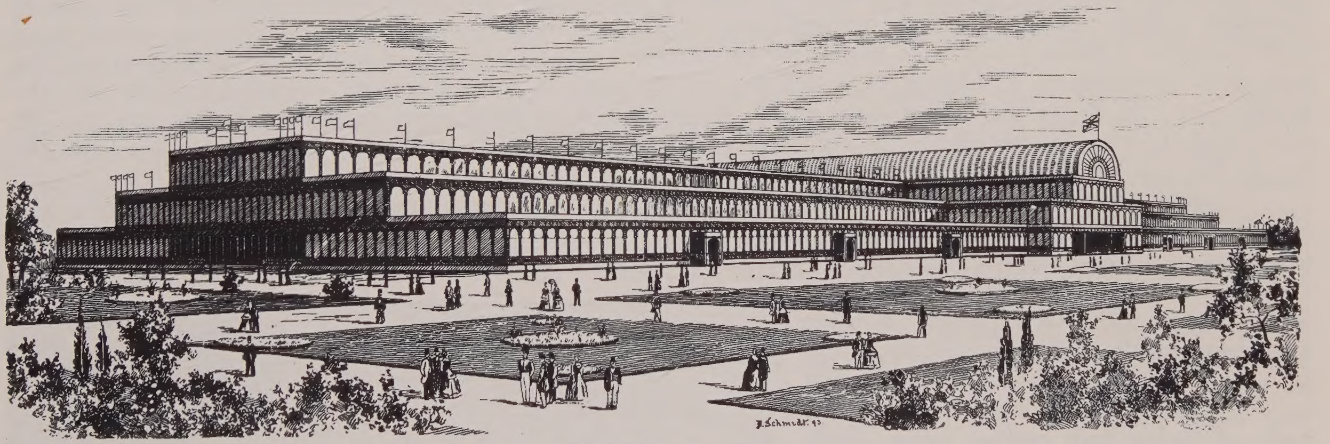


CHAPTER THE FIRST

FAIRS OF THE PAST

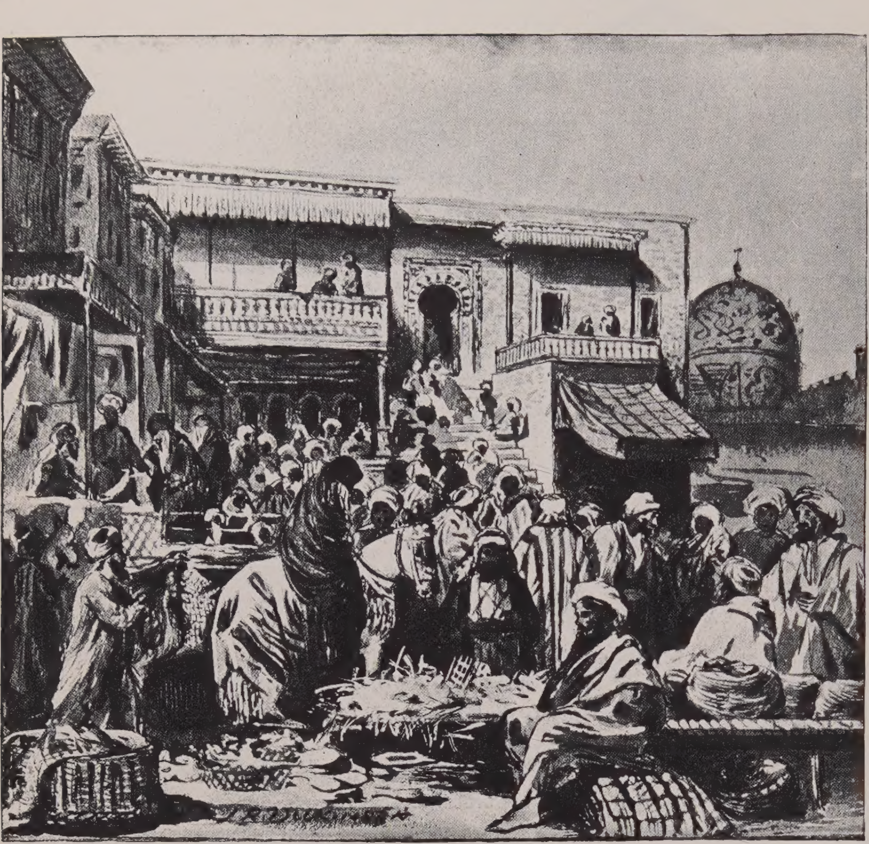
OF all the distinguishing features which separate mankind from the brute creation, perhaps there are none more noticeable than that man is a trading animal. Though in some respects the brute may be possessed of instincts superior to those of a human being, he is not possessed of the trading instinct, and as a certain political economist remarks, "No one ever saw a dog make a fair exchange of a bone with another dog." Among the earliest records of our race is the record of its trade, and in some of the more ancient countries of the world commerce is still conducted as in the days of the Pharaohs. "In 1867," says Ebers, in his *Agypten und die Bücher Moses,* "the traffic of the Nile valley with the East was carried on in about the same manner as in Joseph's time. At the present day the caravans bring in the goods, and the Ishmaelites are their leaders," just as when Joseph was sold into slavery to a company of Ishmaelites coming from Gilead with their camels, bearing spicery and balm and myrrh.

It was not until the days of Solomon that the Hebrews had an established foreign trade; nor was this trade as some would have us believe, of a purely maritime character; for by Solomon were built and fortified the cities of Palmyra and Tadmar, the former as a caravan station for traffic with eastern Asia, and the latter as a point on the great caravan route between Babylon and Damascus. In the first book of Kings we have mention of a toll being levied on this traffic, and the "cities of store" there alluded to were merely bazaars or periodical fairs. In the time of the Maccabean princes it was the custom in Judea that on a certain day of each month the country people should go up to the cities to attend the monthly fairs, and at this period it was an established usage for the dwellers around Jerusalem to pay at least a weekly visit to that city for a similar purpose. At a point where the three quarters of the city converged a fair was held; and the traffic conducted in the temple, at the time when Christ overturned the tables of the money-changers and the seats of those who sold doves, was of somewhat in the nature of a fair.



WORLD'S FAIR LONDON, 1851.

Among the Phœnicians, for centuries the foremost of commercial nations, the fair does not appear to have been a favorite institution; but those of other countries were largely attended by Phœnician merchants, who knew how to turn them to their own advantage. "They frequented," says Movers in his *Die Phœnizier,* "the great and small festivals of the Israelites, which were connected with fairs, and the festivals of lower Egypt were connected with the arrival of the caravans from Phœnicia twice a year." Elsewhere, as he remarks, eastern trade was facilitated and promoted by the old custom of holding fairs at the sacred places in connection



AN EGYPTIAN FAIR

with the great festivals, and with the scattered and often disunited nomadic tribes of Arabia and Africa such festivals were the only means of intercourse.

At the fairs held in many of the principal seaports and inland towns of the ancient world, Phœnician merchants were present; for almost until the downfall of Carthage their commerce extended in every direction, penetrating by way of the Persian gulf to the coasts of Africa and Hindostan, while through the straits of Gibraltar their vessels passed north to the British isles for cargoes of tin, and to the shores of the Baltic for amber. All the products of their own and other lands, whether articles of common use or such as would cater to luxury and fashion, were carried from far and near between the leading marts of traffic by these eager and covetous traders.

Among the ancient Greeks there were fairs in connection with their popular assemblies, especially those held for political purposes, and even at the Olympic and other games, where trading was an important feature. Such at least is the statement of Cicero, who relates that as far back as the days of Pythagoras the religious games were frequented by merchants for the purposes of traffic. At Delphi annual fairs were held, partaking of a religious character, as was the case in most European countries until far into the middle ages. In Rome, the market-place where Horace loved to stroll while bargaining for his corn and oil, was thronged with vast multitudes on occasions of festive and political gatherings, and on such occasions the special facilities for trade gave to these markets the character of fairs.

Among African nations, whether savage or civilized, the commercial instinct is strongly developed, and even in the interior of the dark continent most of the tribes are to a certain extent engaged in trade. For many centuries Cairo was the emporium for some of the choicest productions of the earth, and here annual fairs were held on the arrival of the caravans from Syria, Arabia, and central Africa, bringing with them goodly stores of gold dust ivory and ostrich feathers, aromatics spices and perfumes, together with bands of slaves, the traffic in human flesh yielding larger profits than all the rest. In the villages scattered throughout the Congo basin periodical markets are held for the sale of food and clothing, and on the lower Niger there are fairs once a fortnight at various points, permitting commercial intercourse with neighboring tribes, and forming the nearest approach to foreign commerce of which this region is capable. In the district traversed by Mungo Park fairs were not infrequent. "At Sansanding, near Sego," he says, "there is a very large space which is appropriated for the great market every Tuesday. On this day astonishing crowds of people come from the country to purchase articles at wholesale, and retail them at the different villages."

SCENE IN NORWAY

At Mecca is held, during the annual pilgrimage, the greatest of Arabian fairs, and one of the greatest in the world, the concourse, though largely diminished within recent years, often exceeding 100,000 of the faithful, among whom is a large admixture of merchants and traders. Elsewhere in Arabia there are fairs and festivals in many localities on certain days of the week, attended by the villagers from all the country round, traffic being followed by games, races, recitations, and other amusements. In the province of Hasa the fair is one of the most ancient of its institutions, and among others may be mentioned those held at Hofhoof, and at the town of Mebarraz, toward the north, where the booths are so arranged as to form temporary streets and squares. The goods exposed for sale would appear to be selected more for utility than elegance, and include such articles as brass utensils, coarse clothing and sandals, muskets and daggers, with a miscellaneous assortment of beasts of burden, especially of camels and dromedaries. By professional peddlers are offered, in temporary booths, glass bracelets, beads, and mirrors, with arm and ankle rings of copper, brass, or silver, while elsewhere are piled in front of the vendors, both male and female, bags of meal and flour, bundles of sugar cane, and heaps of vegetables and fruit, of charcoal and firewood.

AN ENGLISH FAIR

At Ocadh was held, once a year, a general assembly of the tribes, with a fair on the Sabbath of each week. Traffic was not, however, the main object of this gathering, but rather to encourage a friendly emulation among their poets. Nowhere was poetry held in greater esteem than among the Arabs, whose orations were often delivered in metrical diction, and by whom no accomplishment was held in such esteem as that of writing smooth and elegant verse. The rise of a new poet was made a subject of congratulation by the neighboring tribes, and only on two other occasions were such congratulations tendered, these being the birth of a boy and the dropping of a foal of superior breed. The assembly, with its attendant fair, was suppressed by Mohammed, in whose days poetry could not go hand in hand with the Koran and the sword.

In India the local traffic of the larger towns is conducted at the bazaars, which are in the nature of permanent markets, while, at many of the villages, weekly markets or fairs are held, with larger annual gatherings at certain points, originally for devotional purposes, but where in more recent years religion has only served as an excuse for traffic and amusement. One of the largest of these fairs is held at Hurdwar, on the upper Ganges, during the season of the vernal equinox, and is attended by 200,000 to 300,000 visitors, while at the sacred festival, held every twelfth year, it is said that no less than 2,000,000 pilgrims and merchants are present. On such occasions every article of home production is offered for sale, and thousands of the smaller class of traders add to the collection everything that can be packed into a peddler's wallet.

AN IRISH FAIR

But it is with the fairs of Europe and America that we are more immediately concerned, and before presenting a brief outline of their history, a few remarks may be of interest as to their origin and characteristic features. In the majority of instances the ancient fairs of Europe were established in connection with religious festivals, and hence were held within or near some place of worship, or on some sacred spot, as around the shrine of a martyr, or the tomb of a saint. At first these gatherings were purely for devotional purposes, but presently a certain business was transacted in provisions, the demand for which increased with the influx of worshippers. Then came the idea of profiting by this traffic, followed by the attendance of merchants who offered for sale a variety of wares. In describing a miracle wrought at the tomb of St Eugene, it is related by Gregory of Tours that, on the anniversary of his martyrdom, merchants offered their goods for sale in the atrium of the church, and, says Levasseur, writing of the Carolingian period in his *Histoire des Classes Ouvrières*, "The aisles of the cathedral were then in Christian towns what the forum had been in Roman cities." At the fair of St Denis, the origin of which was an indictum, or assembly of the people, summoned by the archbishop of Paris in

1109, a piece of wood from the true cross was exhibited, and such was the curiosity of the people that almost until its suppression in 1789, this became one of the most popular of all European fairs.

Before and during the middle ages fairs were of unquestionable benefit, especially to remote and inland countries, where, even in the larger cities, shops were restricted in number, as were the articles offered for sale. Moreover, to many of them were granted valuable privileges, together with special facilities for traffic. For the most part they were exempt from taxation, and those who attended them received the protection of government for their persons and property, advantages duly estimated at a time when travel was difficult and unsafe, and when commerce was burdened with imposts of every conceivable description. Such institutions were also beneficial as a means of instruction, bringing distant communities into closer contact with civilization, and affording an opportunity for comparing the qualities of home-made and foreign goods. With the development of legitimate commerce, however, they gradually became unnecessary, and now belong to an order of things that is rapidly passing away. In the United States fairs of this kind never acquired a permanent foothold, and if established in a few instances, were not considered of the same importance as among old-world communities.

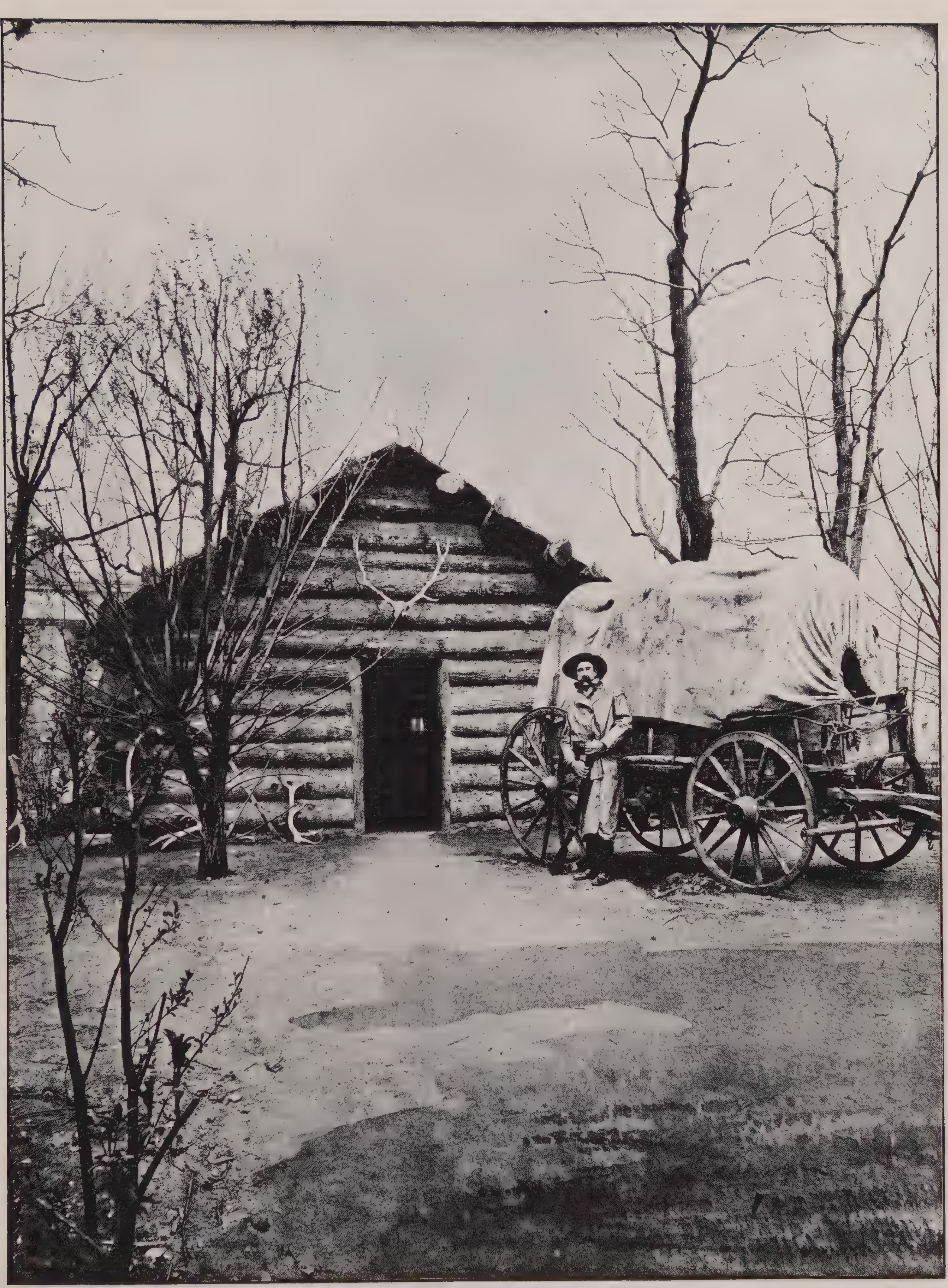
In England the first fairs of which there are any record were in the opening years of the third century, at which date they were already regarded as a public necessity. As some have it, the word fair is derived from the Latin forum, a market place, though a more probable derivation is from feriæ, the festival days of the church, since in olden times fairs were held on such days in the churchyard, or even in the church itself. In the days of the Plantagenets the revenues proceeding from fairs were granted by the reigning sovereign to the dignitaries of the church, or for charitable purposes, as when King John bestowed a charter on the Stourbridge fair for the support of a leper hospital. Occasionally, however, they were applied to baser uses, the king's jester, for instance, receiving in 1133 a charter for the fair of St Bartholomew, held annually after that date until 1855, when this, the last of all the London fairs, was abolished as had been the rest, as public nuisances, "productive of grievous immorality."

PRINCE ALBERT

The ecclesiastical privileges and charters granted at the fairs of mediæval England wrought serious mischief to British merchants and storekeepers. Thus while the abbot of Westminster's fair was running, the shops of London must be closed, and on the eve of St Giles' fair, held at Winchester, and of which the bishop of Winchester was the presiding lord, the magistrates delivered to the bishop the keys of the city gates, the latter appointing for the occasion his own officials. Apart from the fair, business was suspended, except by special permission, and along the public roads officers were posted with orders to confiscate all goods purchased or sold, or exposed for sale, within a radius of several miles. As late at least as the sixteenth century, the trade of the country districts was largely conducted through the medium of fairs, gradually giving place to daily or weekly markets, with the improved facilities for communication afforded by canals and substantial county roads. Nevertheless, even at the present day, the fair is by no means an institution of the past. At several of the country towns are annual displays of live-stock, and at Horncastle, Lincolnshire, is one of the largest horse fairs in the world, attended by European and American traders. At Falkirk is one of the largest Scottish fairs, or trysts, and in Ireland the Galway town of Ballinasloe takes the lead in this direction, the traffic at both of them being mainly in cattle and sheep.

Whatever may be said against these fairs, it must be admitted that their influence on the well-being of the community was in the main beneficial, and the more so when stripped of their religious character, when the church was no longer permitted to use them for her own advantage and profit. Hand in hand with the church, however, they tended to evoke and foster an international spirit, becoming the seat of foreign agencies, and in the middle ages helping to instruct the less civilized nations of northern Europe in the financial and commercial systems of what were then the centres of European commerce and finance. During all the long cycles when monopolies were regarded as indispensable to a country's prosperity, they formed indeed almost the only substitute for the free and unrestricted trade of modern days.

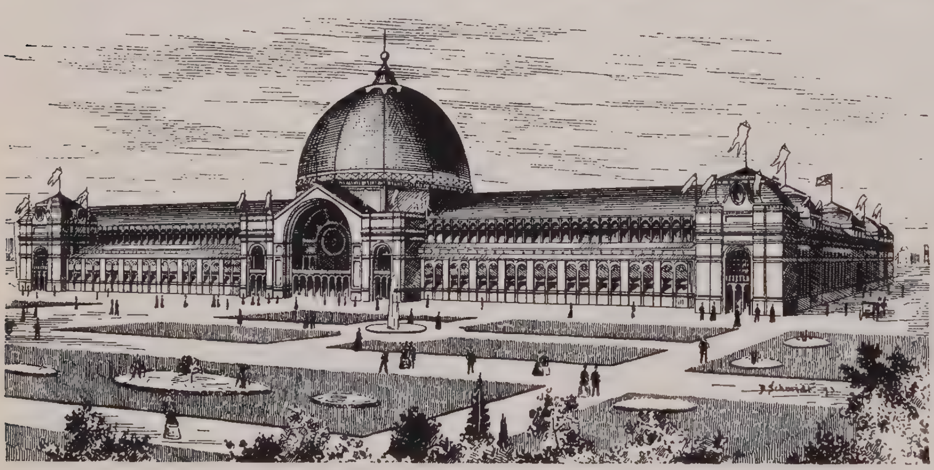
In the United Kingdom prejudice and indifference long stood in the way of such national exhibitions as were held during the first half of the century at many of the metropolitan cities of Europe. Some minor efforts there were, as in the exposition of 1828, which, after a lingering existence of several years, sank to the level of a bazaar; but the only one approaching to national importance was at Birmingham in 1849, considered at the time a marvel of industrial display. At length, after the spread of railroad and steamship lines had



THE HUNTER'S CABIN. COLUMBIAN EXPOSITION, 1893 brought England into closer communication with the industrial and commercial centres of the world, it was determined to hold in London an international exhibition on such a scale as had never before been witnessed. A royal commission was appointed, and on a site appropriated for the purpose in Hyde park, was erected the temple of glass and iron known as the Crystal Palace, afterward removed in sections to its present location at Sydenham. It was in truth a stupendous and yet a tasteful edifice, its length corresponding in number of feet with the date of the year, with a width of 400 feet, and an annex of large proportions, covering in all an area of some 23 acres.

For the design, competition was invited from the architects of all civilized nations, and with the result that out of the 230 plans submitted, that of Joseph Paxton, who adopted as his model the leaf of the Victoria Regia, or African water lily, was the one selected. In the construction of this building, one of the largest as yet erected on the face of the earth, there were used 900,000 square feet or 400 tons of glass, with 3,300 iron columns, and of lumber and other materials sufficient to build a city almost as large as was then the city of Chicago. Within a few months the structure was completed by an army of workmen, mustering at times more than 2,000, and with many additional thousands employed in other departments of the enterprise.

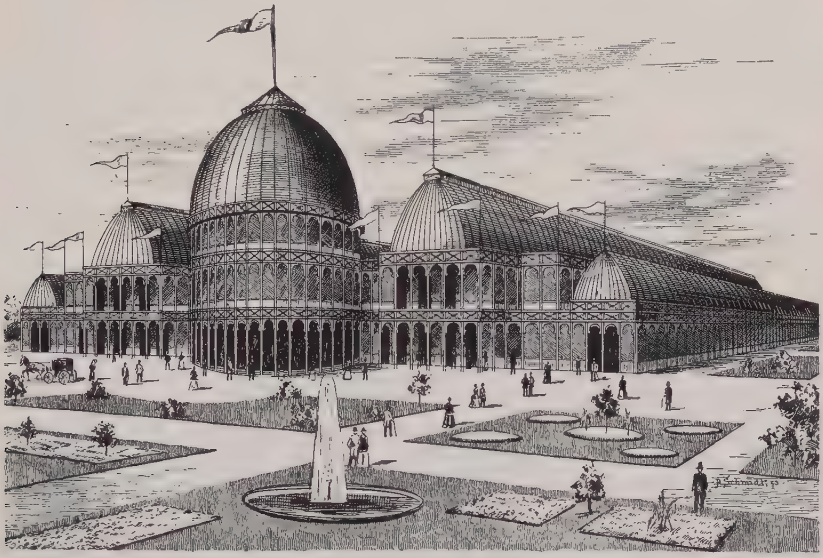
On the first of May this so-called Great Exhibition was opened by the queen in person, in the presence of such an assemblage as had seldom before been gathered on British shores. The inaugural address was delivered by Prince Albert, one of the originators of the enterprise, and among the invited guests were such men as Lord Palmerston and the duke of Wellington. At a banquet given by the mayor of London the prince delivered an after-dinner oration, from which the following extract may be of interest; for his remarks apply with even more pertinence to the days in which we live: "Nobody who has paid any attention to the particular features of our present era, will doubt for a moment that we are living at a period of most wonderful transition, which tends rapidly to accomplish that great end to which all history points, the realization of the unity of mankind, not a unity which breaks down the limits and levels the peculiar characteristics of the different nations of the earth, but rather a unity, the results and products of these very national varieties and antagonistic qualities. The distances which separated the different nations and parts of the globe are gradually vanishing before the achievements of modern invention, and we can traverse them with incredible speed; the languages of all nations are known, and their acquirement placed within the reach of everybody; thought is communicated with the rapidity and even with the power of lightning. On the other hand the great principle of the division of labor, which may be called the moving power of civilization, is being extended to all branches of science, industry, and art. While formerly the greatest mental energies strove at universal knowledge, and that knowledge was confined to few, now they are directed to specialties, and these again to the minutest points. Moreover, the knowledge now acquired becomes the property of the community at large. Thus man is approaching a more complete fulfillment of that great and sacred mission which he has to perform in this world."


WORLD'S FAIR, LONDON. 1862

The exhibiting space was equally divided between home and colonial products and those of foreign lands, while of the 14,000 exhibitors somewhat less than half were of foreign nationality. Here was for the first time presented a general display of the productions of the civilized world, divided into the four departments of raw material, manufactures, machinery, and fine arts, and with 30 classes or subdivisions, of which only one was devoted to art, and contained but an indifferent collection, though including a few such gems as Powers' Greek Slave, for the first time displayed to English critics. Of all the exhibits the one that attracted most attention was the famous Koh-i-noor diamond, around which clustered a ceaseless throng of the more vulgar sight-seers, eager for the hurried glance allowed them while passing in endless procession between files of the London police.

In the United States the Great Exhibition aroused but a feeble interest, the number of American visitors not exceeding 5,000, while of exhibitors there were somewhat less than 500. Of awards, however, we received a larger proportion than any of the foreign participants, including 107 medals and 53 honorable mentions, among other prizes being those awarded to McCormick's reaper, to the woolen and cotton fabrics of Massachusetts and Rhode Island, and to American wagons, buggies, and trotting sulkies, whose lightness, strength, and durability were somewhat of a surprise to our English cousins.

During the 144 days that its doors remained open this fair was visited by more than 6,000,000 persons, or an average of 42,000 a day, with receipts of about $2,500,000 against an outlay of less than $1,500,000. It is worthy of note that this, the first of our great world's fairs, was the only one which has thus far proved a great financial success, and that with a smaller expense and shorter existence than any, its earnings were the largest recorded prior to our own Centennial Exposition. As to its minor features it may be mentioned that goodly profits were secured, not only by the managers, but by those to whom special privileges were awarded. Thus the firm to whom was granted, for $16,000, the right of printing catalogues, sold about 300,000 copies for the sum of $75,000, netting from $30,000 to $40,000 by their bargain. But still more fortunate was he who obtained the contract for supplying refreshments, for which he paid but $27,500, against $375,000 as the total of receipts. To the average sight-seer a spectacle loses much of its interest if not accompanied with eating and drinking, and that this was no exception is shown by the enormous consumption of victual and drink, though meals were limited to cold meat, potatoes, bread in some shape, and temperance beverages. Among other articles there was consumed 2,350,000 loaves and cakes, or nearly half a loaf or cake to each visitor, with 700,000 pounds of ice, 70,000 of ham, of beef an unknown quantity, and other materials in proportion.


WORLD'S FAIR, DUBLIN, 1853

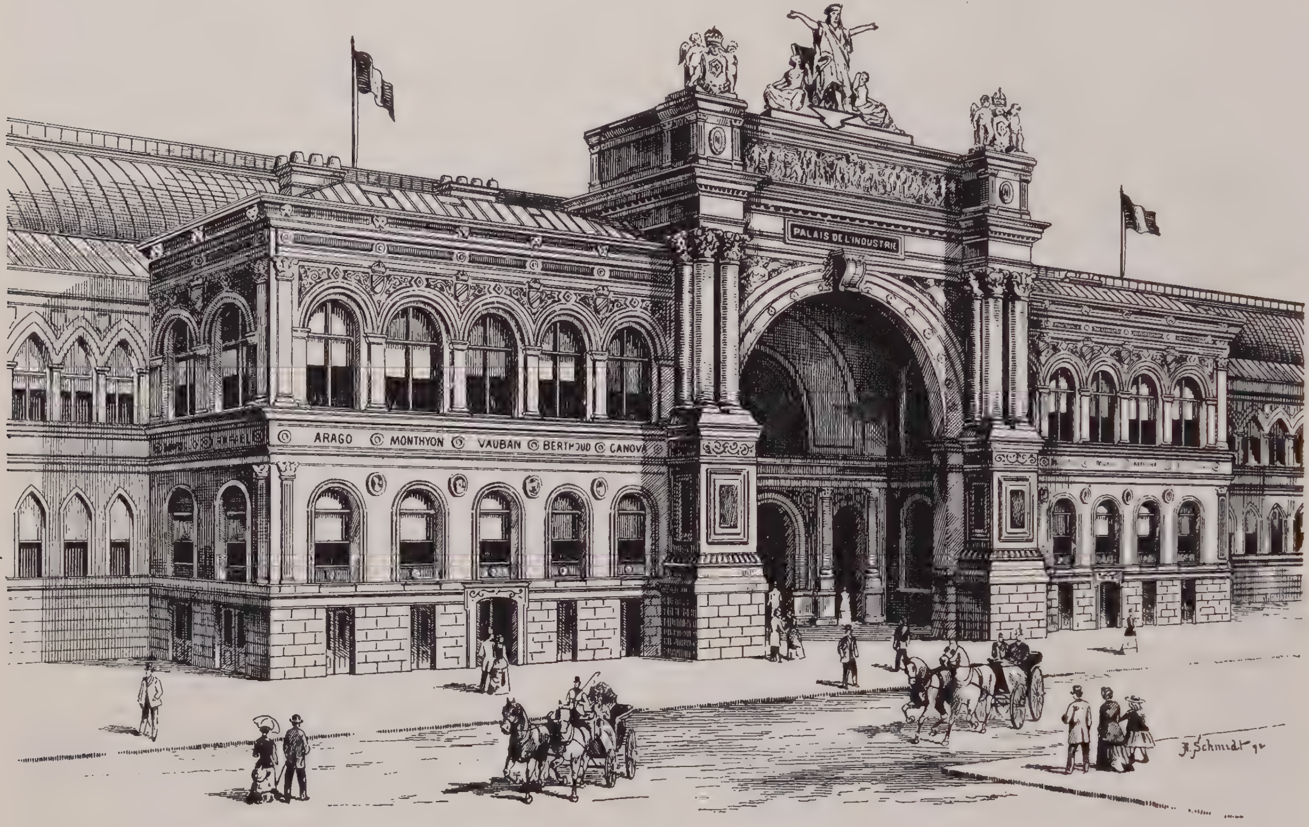
The success of the Great Exhibition, and especially its financial success, led to similar enterprises in every portion of the civilized world, of which mention will be made in connection with the countries to which they belonged. In England another exposition was projected for 1861, but the death of Prince Albert caused its postponement until the following year. On the first of May, 1862, it was opened in the grounds of the Horticultural Society, London, with one of the most imposing pageants ever witnessed in this land of civic display. The building, including its annexes, covered an area of more than 23 acres, and was surmounted, or rather consisted in part of two immense domes, larger than St Peter's, between which was a nave 800 by 80 feet, leading into a central avenue, and to innumerable glass-roofed aisles, galleries, and transepts. The exhibits numbered about 28,600, and resembled in the main, though on a larger and superior scale, those of the Exposition of 1851, as also did their classification, except for a few additional subdivisions. Among the more attractive features was the display of manufacturing and mechanical processes actually at work, as of needle machines, lithographic and copper-plate printing, type-casting, wood-carving, and the making of gold chains. On account of the civil war the United States was poorly represented, with only 128 exhibitors, to nearly all of whom were awarded either medals or honorable mentions. On this occasion the art display was one of which the managers had no cause to be ashamed, including nearly 3,400 original paintings, not a few of which have since become world famous, with 900 pieces of statuary, and a vast array of engravings and architectural designs. Though with 27 more admission days, the attendance was but slightly above that of 1851, and with receipts about $500,000 smaller, yet leaving a moderate surplus to the credit of the enterprise.

SCENE IN BRITTANY

That no world's fairs have been held in England since 1862 is due to the prevailing impression that, with the ever-increasing variety of manufactures and mechanical and scientific appliances and inventions, these exhibitions would assume such mammoth proportions as to become unmanageable. It was therefore decided to hold an annual exhibition of the arts, of scientific inventions, and of manufactures, of the last only two or three branches at a time, but in such rotation as would permit all classes of manufactures to be represented at least once in every ten years. Though at first these smaller expositions were well attended, their frequency and the absence of any novel features soon brought them into disfavor.

In Dublin international exhibitions on a small scale were held in 1853 and 1865, both of which owed their existence to the liberality of private citizens. A feature in either was its art display, that of 1853 being one of the finest then extant, while many of the works in the collection of 1865 were secured by the British government. Though fairly attended they were not a financial success, and failed to arouse more than a local interest.

In connection with art exhibitions should be mentioned the one held in Manchester in 1857, to which were contributed some of the choicest gems in the possession of the Royal Academy and of private individuals, including those of such masters as Holbein and Van Dyke, Sir Joshua Reynolds and Sir Thomas Lawrence.



WORLD'S FAIR. PARIS, 1855

Turning to the annals of French fairs and expositions, we find that among the most ancient of the former were those held at Lyons, by permission of the Roman conquerors, and probably dating back to the reign of Augustus, who gave to the town its first large public improvements, and made it the seat of an annual assembly of deputies from the sixty cities of Gaul then under Roman sway. Early in the fifth century the fairs of Champagne were regarded as long established institutions, and about the middle of the seventh was granted to the monks of St Denys by Dagobert, king of the Franks, one of the first charters for this purpose of which any record remains, "for the glorie of Goddes and the honour of St Denys at hys festival," as a Saxon chronicler has translated the royal missive. It is somewhat of a reflection on the age to learn that human chattels were among the commodities exposed for sale, and it is even related—and that on no dubious authority—that French children were taken in exchange for slaves, to be bartered away in foreign lands. In common with others, the fairs of St Denys were largely attended by foreigners, the Germans bringing for sale their cattle, the Saxons from southern Angleland, or England, their tin and lead, while the Sclavic nations furnished other metals and metallic wares. In the reign of Childebert they were also frequented by Hungarians and Neustrians, though losing somewhat of their importance with the decadence of commerce.

Fairs could be legally established by the king alone, the first one instituted under the dynasty of the Franks being authorized by royal edict, while, several centuries later, we find in the capitularies of Charlemagne a clause forbidding markets of any kind, except such as might be authorized by prescription of the monarch or his ministers. For those held at Troyes regulations were framed by Philip of Valois, which fairly represented European legislation on this subject. There was a presiding judge and a court of justice, often with a jury of merchants or traders; there were police officers for the preservation of order and the execution of the court's decrees; there were notaries for the attestation of bargains, and numerous other officials, among them the prud' hommes, whose duties resembled those of our market inspectors—the examination of goods exposed for sale, and the condemnation of such as were unfit for use. In many districts, however, the jurisdiction of fairs, together with a toll on all moneys received for admission and for the sale of certain commodities, was assigned to the regular or secular clergy, the latter in trust for their churches, in front of which the fairs were opened, with due solemnity and ceremonial.

In what may be called the later feudal period, from the closing years of the twelfth until nearly the middle of the fourteenth century, fairs were held at most of the towns and burghs, and in many of the villages, a series of such fairs forming in some districts a continuous market. By ordinance of 1327, says Bourquelot, in his *Foires de Champagne*, commissions were granted by the wardens of fairs for the exchange of money. The men thus privileged occupied a high position, and for their accommodation special stalls were provided, "opening on a square or street, containing a table with a cover, a bench, and scales." Some of them, who appear to have been acquainted with the banking system of the Lombards and Florentines, added banking to their other business, and there are instances where loans of money were made by the money changers of Champagne to French and foreign merchants.

With the development of legitimate commerce fairs decreased in importance, though still affording many privileges, among them a partial exemption from the all-devouring system of taxation inaugurated during the latter dynasty of the Bourbons. In the reign of Louis XVI the right to establish fairs was still reserved by the monarch, and by his simple decree they could be created, modified, or suppressed. Finally, with a few exceptions, they were swept away in the storm of the French revolution. Among those that still survive, the most prominent is held at Beaucaire, during the last week of July, and to this certain privileges were granted by the courts of Toulouse. In the centre of the town a plaza is devoted to the purpose, in which are erected hundreds of stalls, where is exposed for sale almost everything that forms an article of commerce.

A. Schmidt. 93.

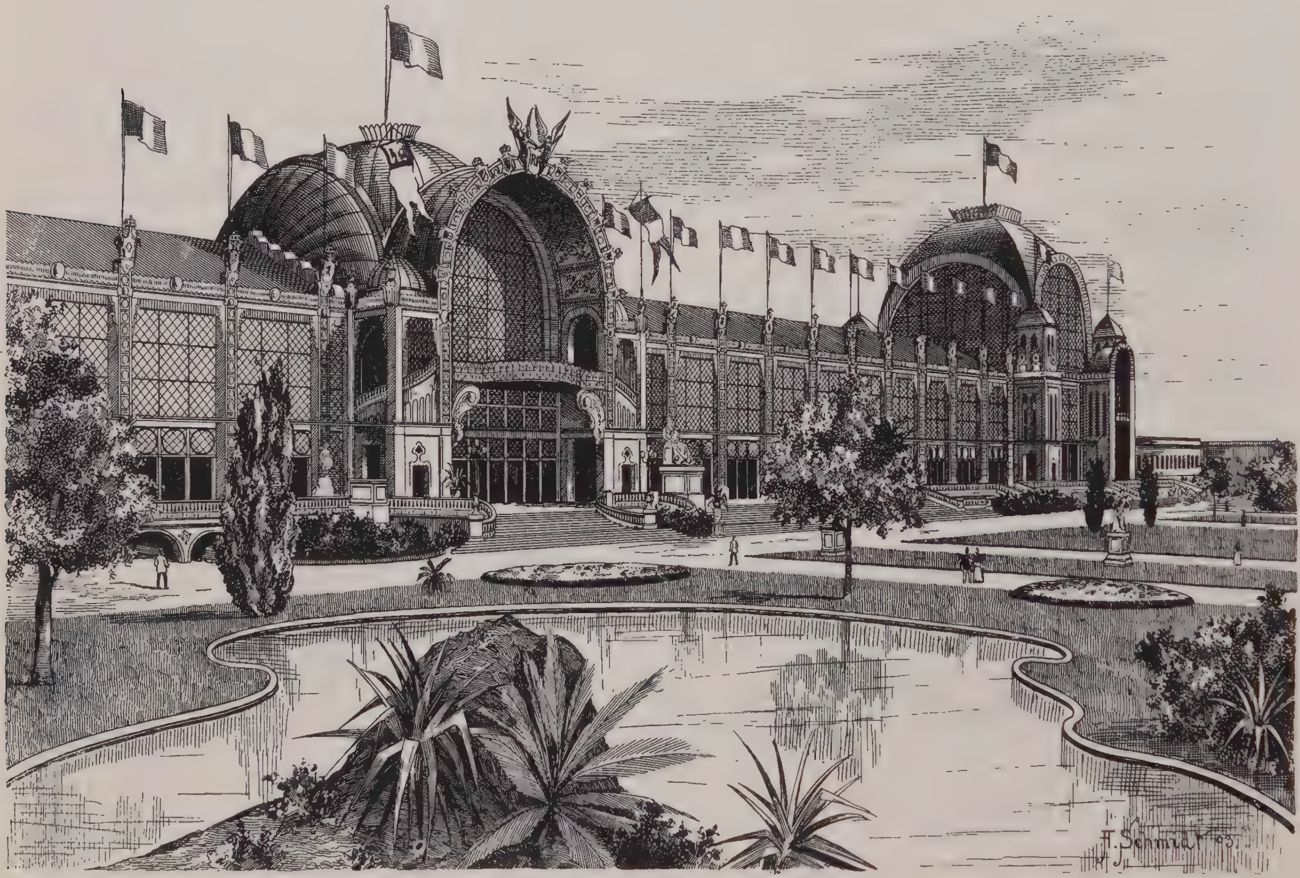
WORLD'S FAIR, PARIS, 1867

To the French belongs the honor of first adding the national exhibition to the local fair, though by the English this distinction is claimed for the London Society of Arts, whose displays date back to the year 1761. The latter, however, while partially of an industrial character, and including agricultural and other machinery, can not properly be classed as national exhibitions. The first one worthy of the name, though lasting but for three days, and with only 110 exhibitors, was at the Temple of Industry, erected by Napoleon in 1798, in the Champs de Mars. Here, also, was established the system of awarding premiums and prizes by the jury system, and with a special gold medal offered to him whose exhibit should suggest the most effectual means of destroying British commerce. Others were held at brief intervals ending with 1806, but followed a few years later by a larger exposition held at the Louvre in 1819, with more than 1,600 exhibitors, to whom were awarded some 800 medals and premiums. All these, and similar expositions continued until the middle of the century, were merely of a national character, not through the indifference of foreign countries, but as a matter of policy, the French minister forbidding the introduction of foreign products as an innovation dangerous to the industries of France.

In 1844, and again in 1849, industrial exhibitions were held in Paris, each one on a larger scale, and containing more varied exhibits than any of its predecessors. Both were located in the Champs Elysées, that of 1849, though still only a national display, almost reaching the proportions of a modern exposition, with 5,000 exhibitors and nearly 4,000 awards. In the exhibits, which consisted mainly of manufactures and machinery in motion, there were no special features worthy of note.

Of the four international exhibitions held in Paris, the first was opened in the Champs Elysées by Louis Napoleon on the 17th of May 1855, and in the fine arts and their application to industrial products contained such a collection as had never before been brought together. Comparing the display with that of the Great Exhibition in London, one could not but admit that Bonaparte's characterization of the British as a nation of shopkeepers was in a measure justified; for in the one the most attractive feature was its representation of the works of living artists, while the other was little more than an exhibit of raw produce, machinery, and manufactured goods.

Even in the Palais d' Industrie the arts were largely represented, though with a special building, styled the Palais de Beaux Arts, set apart for this purpose, while agricultural implements and other mechanical appliances, of which the London show so largely consisted, were consigned to inferior departments. At the close of the fair, on the 15th of November, medals were distributed among more than 10,000 of the 23,000 exhibitors, of whom one-half were foreigners, representing 75 nations and colonies.

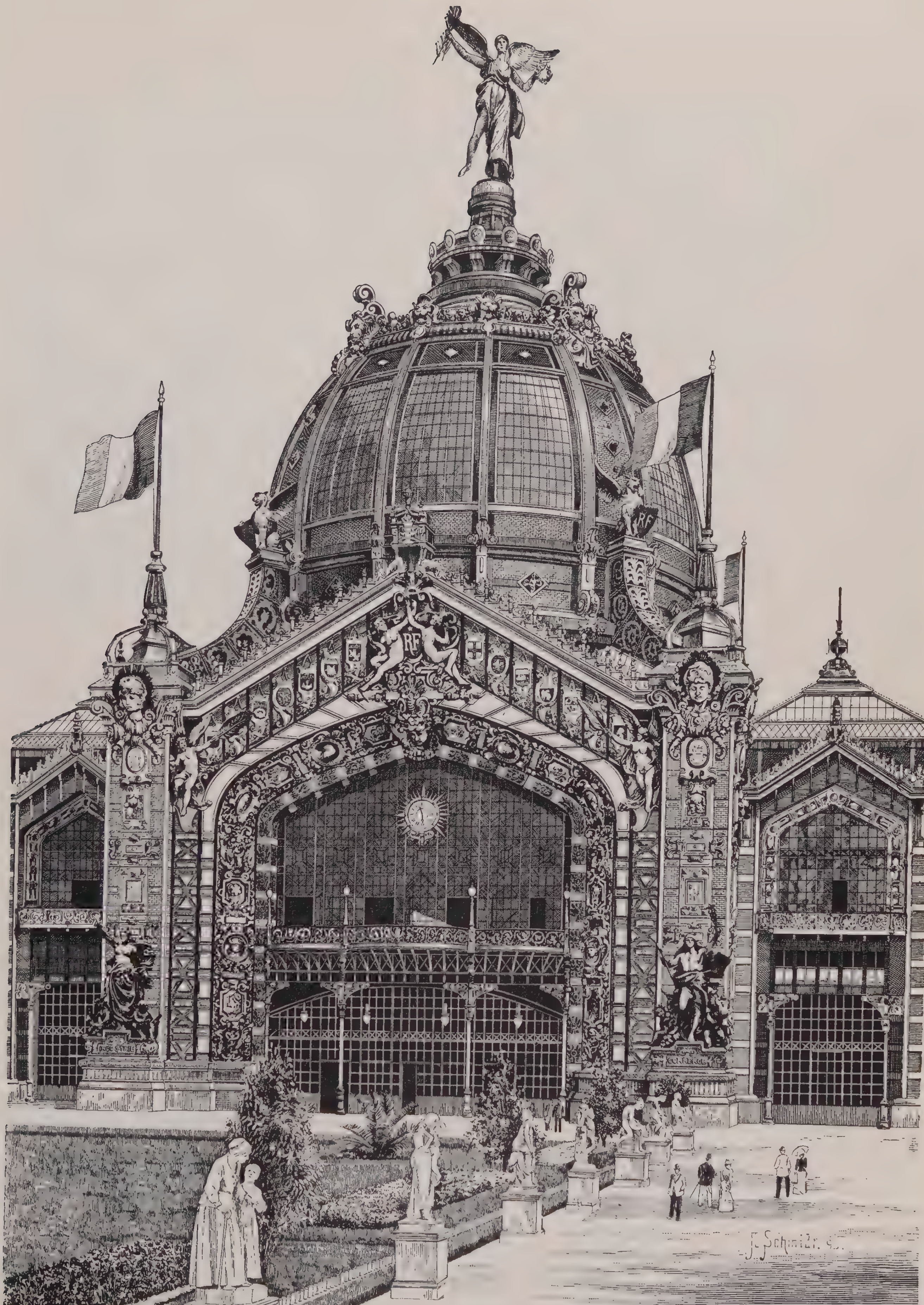

A. Schmidt '93.

WORLD'S FAIR, PARIS, 1878

In all respects, save one, this effort was an unqualified success, and that one was its financial affairs. This was, however, of little moment, as the loss was borne by the government, and was more than compensated for by the amount expended by half a million of visitors. Among those visitors were the queen of England, the prince consort, and the prince of Wales, with at least 40,000 of their subjects, for here was a more complete representation of British products than at the exposition of 1851.

Somewhat of a utilitarian character was the Exposition Universelle, opened in April, 1867, in the Champs de Mars, a fitting site for a great world's fair, since here was celebrated the festival of federation which preceded the overthrow of the Bourbon dynasty, and here, on the first of June, 1815, the great Napoleon held the last of his coronation ceremonies. At none of our international expositions, before or since, have the monarchies of the world been so largely represented, among those whom the French emperor entertained as his guests being the czar of Russia, the prince of Wales, the kings of Prussia, Denmark, Sweden, Portugal, the sultan of Turkey, and the khedive of Egypt.

One of the main purposes of the Exposition Universelle was to furnish, as far as possible, a complete exemplification of the industrial resources of mankind, so classified that nearly all branches of industry, as applied to the satisfaction of human wants, were here represented. One of the most interesting features was the



WORLD'S FAIR, PARIS, 1889

architectural display, in which were reproduced the buildings of all nations, including all styles, classes, and periods of civil, military, ecclesiastical, and domestic architecture, from a fortress to a guard-house, from a cathedral to a wayside chapel, and from the palatial residence of a European to the hut of an Eskimo and the tent of a Bedouin Arab. Not the least remarkable among the architectural specimens was the Exposition building itself, in the shape of an oval, covering 37 acres of ground, except for a small open garden in the centre, from which radiated twelve concentric aisles. The design, which was selected by Prince Napoleon, was such as to present the display of exhibits by classes and countries, so that each class of products could be followed in one continuous series through every producing nation.

Though better represented than at former expositions, especially as to the display of machinery and inventive appliances, the United States had but 536 out of the 50,000 exhibitors. This country secured, however, a large percentage of awards, larger indeed than any other nation except France herself, including five grand prizes, 18 gold medals, 76 silver and 98 bronze medals, with 93 honorable mentions. As the American commissioner remarked, "The high position conceded by the verdict of the juries to American industrial products was not due in general to graceful design, fertile combinations of pleasing colors, elegant forms, elaborate finish, or any of the artistic qualities which cultivate the taste by awakening in the mind a higher sense of beauty; but it was owing to their skillful, direct, and admirable adaptation to the great wants they were intended to supply, and to the originality and fertility of invention which converts the elements and natural forces to the commonest uses, multiplying results and diminishing toil." At a meeting of foreign commissioners, held at the close of operations, it was recommended that other exhibitions should be held in rotation at the leading capitals of Europe; that inasmuch as their usefulness depends not on size, but on selection or quality, the tendency to increase the size of each succeeding exposition should be discouraged; that in future no prizes be awarded; that no goods be removed for sale, thus degrading an exposition to the level of a bazaar; and that for the better comparison of exhibits, arrangement should be by classes rather than by nationalities. Though offered by men whose experience and professional standing should have given weight to their opinions, it does not appear that these excellent suggestions were adopted at other of the great world's fairs.

On the first of May, 1878, was inaugurated, by President MacMahon, the Exhibition of the Works of Art and Industry of all Nations, the first held in Europe under republican auspices. Again the Champs de Mars was selected as the site of the principal building, the Palais d' Industrie, arranged in a series of rectangular galleries, and with a dozen or more annexes outside its walls, covering in all an area of 54 acres. In the centre of this mammoth structure was the pavilion of Paris, containing the exhibits of the city in its corporate capacity, a neat and tasteful edifice absolutely novel in design. On the rue des Nations space was allotted to foreign participants, where each nation erected its own building according to its choice; and very odd was the choice of some of them, especially that of the United States, for the first time represented at European fairs by a home of its own. On the opposite side of the Seine, beyond the bridge of Jena, and half a mile distant from the Palais d' Industrie, was the palace of the Trocadero, afterward preserved as an exposition monument, and so named after a port in the Cadiz roads, captured by the French in 1823. This was devoted to music and the fine arts, with spacious galleries and open colonnades, and in its centre a vast music hall, accessible from all portions of the building and the grounds adjacent.

As in other of the French expositions, the art display was its most attractive feature, and next to that the machinery departments, especially those of England and the United States. Science and literature were also liberally represented, and some of the more valuable contributions in these and other departments were from the national institutions of France. Among the statuary were such gems as Albert Lefeuvre's Jeanne d'Arc as a Child, the groups styled Faith and Charity, by Paul Dubois, from the monument to General de la Moriciére, with others whose modeling, treatment, and design rank them among the classics of modern art. Among the paintings were the masterpieces of Meissonier, Jules Breton, Corot, the elder Daubigny, and artists of all the French schools, whom this nation of artists delights to honor. In the gallery assigned to the United States there were several works of acknowledged merit, as the engravings of Vedder's Marsyas, Coleman's Venice Past and Present, Bunce's Approach to Venice, and a copy by Hovenden of his Breton Interior in 1793.

Though ranking only ninth as to number of exhibitors, the United States secured, as usual, a large proportion of awards, with one diploma of honor, four grand prizes, and medals of honorable mentions granted to 850 out of 1,230 participants. On this, as on other occasions, the comparative insignificance of our display was due to the conservatism of congress, whose appropriation of $190,000 was less than one third of the amount devoted by France, and below even the amount devoted by several British colonies and minor powers for their representation at the great show of 1893.

Far beyond any of its predecessors was the International Exhibition held in the Champs de Mars in 1889, the fourth in the French and the ninth in the world's great series. So vast was the scale and yet so artistic the design that it became the wonder of the civilized nations of earth, and by all it was conceded that never before had been witnessed such a combination of the grand and beautiful in science, art, and industry. To recognize the merits of this stately panorama, one need not even have entered the buildings nor examined the contents, though representing the highest achievements of which the human race was capable. The conception of the project as a whole, the landscape effect of the site, the unique arrangement of the broad but graceful edifices in one homogeneous and yet diversified plan, were alone sufficient to impress the visitor as a marvellous spectacular display.

Intended, as it was, to celebrate the centennial anniversary of the first republic, its purpose forbade the participation of European monarchies, at least in their official capacity; but of foreign exhibits and visitors the number was larger than at any former international exposition. The character of the exhibits will be learned from the appellation of the buildings, which included palaces of industry, of machinery, and of the fine and liberal arts, with ample space allotted to agriculture, horticulture, and manufactures. Interspersed among the main structures were groups representing, among other objects of interest, a street in Algiers, a Turkish village, the minarets of Tunis, and the dwellings of New Caledonia. Nor should we forget the world-famed Eiffel tower, 984 feet in height, one of the most attractive features of the exhibition, and still one of the curiosities of Paris.

A GERMAN FAIR

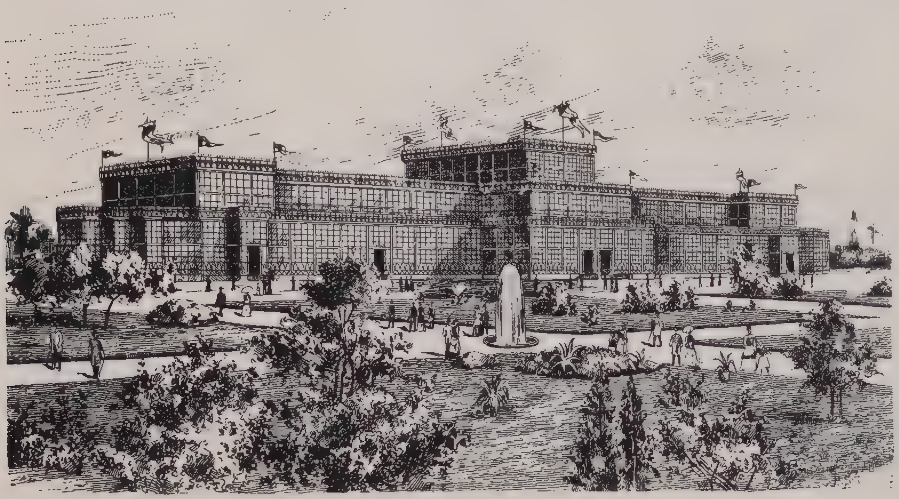
While the art galleries formed one of the most interesting features of this effort, it surpassed, as I have said, all its predecessors as a great international exposition, with a larger scope and variety of exhibits than had ever before portrayed the phases of human industry. There were probably but few who could examine and fewer still who could appreciate in their entirety the treasures and attractions of this great spectacular display. To make the circuit merely of the grounds and buildings, the former occupying 173 and the latter 75 acres, required a journey of fifteen miles, and to form an intelligent estimate of their contents needed months of close observation and study. An enumeration of details, and still more a comparison, would be of itself an arduous task, for here was outlined whatsoever the toil and ingenuity of man had contributed to the welfare of his kind. Here were the costliest merchandise, the choicest products of farm and factory, the most powerful machinery, the most recent inventions and appliances, the decorative art of China and Japan, the priceless art treasures culled from the studios of Italy and France,—all these and other departments without number representing the progress and relative condition of civilization.

And how does Chicago compare with this artistic and industrial achievement after all her lavish expense and earnest striving to build up an exposition that should prove a credit to herself, and to the nation which she represents? Said American visitors to the Paris fair: "Only in Paris can such marvels be accomplished." And yet in the opinion of critics, not only of American but of foreign critics, the World's Columbian Exposition, taken in its entirety, will as far excel the Parisian display as the latter outstripped all previous efforts. As an able writer has remarked, "Those who fail to see the Exhibition of 1893, will fail to see the most beautiful spectacle which has been offered to the eyes of our generation. But those who have time to see only its general aspect, without studying any of its collections, wonderfully interesting though these would be, will have seen the very best of it."

Of the 55,000 exhibitors at the Paris exhibition of 1889, only 1,750 were from the United States; but among these were distributed nearly 1,000 awards, including 52 grand prizes, 189 gold medals, 273 silver, and 220 bronze medals, with 207 honorable mentions. As to visitors, the United States were more liberally represented, 70,000 out of the 1,500,000 foreigners coming from beyond the Atlantic. Of English there were 380,000, of Belgians 225,000, of Germans 160,000, of Spaniards 56,000, of Swiss 52,000, and of Italians 38,000; no other European country having more than 10,000, though the civilized nations of the world, even far off Australia and New Zealand, contributed their thousands to this gathering of the nations. During the 183 days that this fair remained open—from the sixth of May to the sixth of November—the total of admissions exceeded 28,000,000, nearly twice the attendance at the Exposition of 1878, and nearly thrice that at our own Centennial Exhibition. The average daily admissions were 137,000, against 82,000 in 1878, and 62,000 in 1876, the greatest number being on the closing day, when no less than 400,000 persons were present, the largest gathering thus far recorded in the annals of great world's fairs. Considering the superior attractions of the Columbian Exposition, an average attendance of 150,000 a day, as anticipated by its managers, is by no means an extravagant estimate.

For the first time in the history of the French, or indeed of any other international expositions, except for those held in London, the undertaking of 1889 proved a financial success. The entire cost, including all articles chargeable to buildings and grounds, with operating and other expenses, was stated at $8,300,000, or $300,000 less than the original estimate, against total receipts from all sources of $9,900,000, thus leaving a surplus of $1,600,000. That such results were obtained was largely due to strict attention to detail, to the perfect organization of every department, and to the experience and ability of managers and officials. But this margin of profit was one of the smallest issues of the affair, considered from a monetary point of view. It was estimated that, during the term of continuance, American visitors alone expended more than $50,000,000, while each of the 1,500,000 foreigners may have expended, on an average, about $100, or $150,000,000 in all. Add to this at least $120,000,000, as the contributions of the French provinces, at the rate of 220 for each of the 6,000,000 sight-seers, and we have a total of $270,000,000 finding its way into Parisian coffers. So great, indeed, was the influx of gold, that the reserves in the Bank of France were larger than ever before, while by storekeepers, theatres, hotels, restaurants, railroads, and in countless other directions, was felt the stimulating influence of the congregation of peoples. Thus were the government and the citizens of Paris, on whom fell the burden of the expense, repaid more than tenfold for their original outlay. Though of all other French expositions the financial results were, as I have said, unprofitable, the benefits accruing indirectly to the nation and to the world at large, cannot be readily estimated.

In Austria, Germany, and elsewhere in central and northern Europe, fairs were common in the earlier centuries of the Christian era. At some of them slaves were offered for sale, and not a few were held solely for traffic in human chattels. This custom was later introduced into England, probably by German traders, and though slavery was never among her institutions, differing in essential points from the villeinage for which it has been mistaken, barter in slaves was encouraged under the Norman, and perhaps under the earlier Plantagenet dynasty. Of modern German fairs the largest and most attractive are held at Leipsic, thrice a year, beginning with New Year's day, Easter Sunday, and Michaelmas day, the Easter fair being restricted to the display and sale of books, and attended by the principal booksellers of Germany and adjacent countries, with new publications to the number of several thousand entered on each of its annual catalogues. Other fairs are held at Frankfort-on-the-Main and Frankfort-on-the-Oder, but are no longer, as in former years, of world-wide interest and celebrity. Thus far no great international expositions have been held in Germany, though the country has been well represented in those of Europe and the United States, appropriating for her building and exhibits at the Chicago Fair the largest amount, with one exception, contributed by any of the foreign participants.


WORLD'S FAIR, MUNICH, 1854

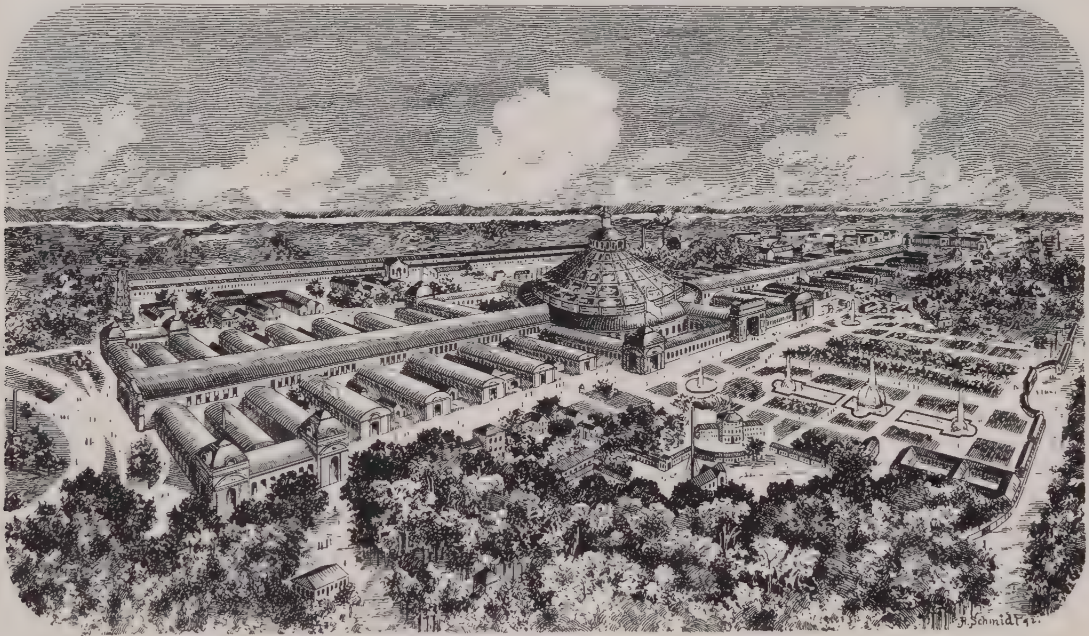
A world's fair opened at Munich in the spring of 1854, with 7,000 exhibits housed in a building modelled after the Crystal Palace, but on a smaller scale, was cut short after a three months' existence by the approach of Asiatic cholera. An exposition held at Cologne in 1865 was limited to agricultural and horticultural exhibits; and in the same year was an industrial display at Stettin, with 1,450 exhibitors. At Berlin, in 1870, was an exhibition of drawing implements, probably the best thus far in its special line, as was, seven years later, the one at Hamburg devoted to the dairy products of European countries.

Fifth on the list of great world's fairs, and first as to hugeness of aspect, was the one held under government control at Vienna in 1873. A commission was appointed for the purpose, selected from the chiefs of departments, and from artists and men of science who had participated in former exhibitions. By the other nations of Europe commissions were also chosen, such as would do honor to the occasion; and never before had been assembled in the Austrian capital such an array of gifted and eminent men. At the head of the British commission was the prince of Wales, and among its members were the marquis of Ripon, Baron Rothschild, and the duke of Teck. Other foreign powers were represented by semi-royal commissions, and as president of the undertaking was appointed Archduke Regnier, with Archduke Charles Louis as protector. But notwithstanding all its pomp and pageantry the affair was not a success. By the almost unanimous verdict, at least of foreign visitors, it was condemned as inconveniently large, as cumbersome in design and elephantine in proportions, while its defects were further increased by careless and inartistic grouping of exhibits.

The display was made in the Prater, or park, in the suburbs of Vienna, the Central park of the Viennese, formerly a portion of the imperial domain, but in 1776 donated for public use by Joseph II. In the principal building, afterward used as a national museum, was a nave more than half a mile in length, with sixteen intercepting transepts, and a colossal central dome, 350 feet in diameter, at that time the largest in the world. In common with the Machinery hall, with its 2,600 feet of length and its ten acres of exhibiting space, the main building was remarkable more for the bulkiness than for the beauty of its architecture. Scattered throughout the grounds, amid the setting of their woodland scenery, were buildings erected by many nations, each in its individual fashion, forming one of the most interesting features of the occasion.

In making its public announcement, some three years before the opening day, the Austrian government proposed to represent, as far as possible, the existing condition of modern civilization, together with all the branches of national economy, with a view to promote their further development and progress. As a display of industrial products, processes, and appliances, the collection of exhibits was one of the most complete that had thus far been brought together. The machinery department was perhaps its strongest feature, containing, as it did, almost every known variety. Through the centre of the hall extended from end to end an array of machinery in motion, separated by aisles on either side from that which required no motive power. Thus, for the space of half a mile, the visitors passed through unbroken lines of machinery of every conceivable pattern and use, and of every degree of power, magnitude, and workmanship. Among other attractions were the farming experiments conducted in the vicinity of the grounds, where might be seen at work steam and ordinary ploughs, with reaping, mowing, threshing, winnowing, and other agricultural machines and implements.

Diplomas of honor, medals, and honorable mentions were freely distributed among the 70,000 exhibitors, and of the awards 442, including nine diplomas and 284 medals, fell to the 654 exhibits of the United States. As at other international expositions, however, the people of the United States were not represented in a manner befitting their reputation for enterprise. "The very freedom and ease of sending to Vienna," says Edward Everett Hale, "tempted countless quacks to send their humbugs to the show; and in the same proportion the judicious have refrained. It became, to a considerable extent, an advertising display. The American exhibition at Vienna was full of quackeries, advertising themselves at the cost of the nation; and this cannot be avoided, unless the collection of exhibits is made up on a system, as was so thoroughly done by the Japanese government. It is for such reasons that the Vienna Exhibition is certainly too large. If it is a specimen of the world, one wants a smaller museum made which may be a specimen of the Exhibition."


H. Schmidt 92.

WORLD'S FAIR, VIENNA, 1873

With the largest outlay, and apart from the Paris Exposition of 1867 the largest number of exhibitors, the receipts were the smallest so far recorded at any of our great world's fairs. The reasons for such results are contained in Mr Hale's remarks, though also due in part to the extreme rapacity of hotel keepers, tradesmen, and others, who advanced their prices from 50 to 100 per cent, thus not only deterring visitors from distant lands, but hundreds of thousands among the middle classes of Austria, Germany, and adjacent countries. Even within the grounds and buildings extortion was shamelessly practised, charges being made by those to whom concessions had been granted, even for the use of lavatories, chairs, and other conveniences that should have been provided free of cost. The number of admissions for which payment was made at the doors fell to the low average of 19,000 a day; the entire receipts were $1,750,000, against a total outlay of $7,850,000.

In Holland, and in portions of Belgium, the annual fairs held at Amsterdam, Rotterdam, and other large cities are the signal for much boisterous merriment and rejoicing among all classes of the people. The theatres and shows are largely patronized, the farmers and villagers looking forward to the occasion as one on which to satisfy alike their household wants, their curiosity, and their taste for amusement. Then does the Dutchman lose his self restraint, parading the streets by day and night with noisy demonstrations and a vast consumption of solid and bibulous refreshments. An exhibition of Dutch industries held at Haarlem, in 1861, was followed in 1864 by one at Amsterdam, which included also an art collection, and again in 1869, at the latter city, by

NOVGOROD

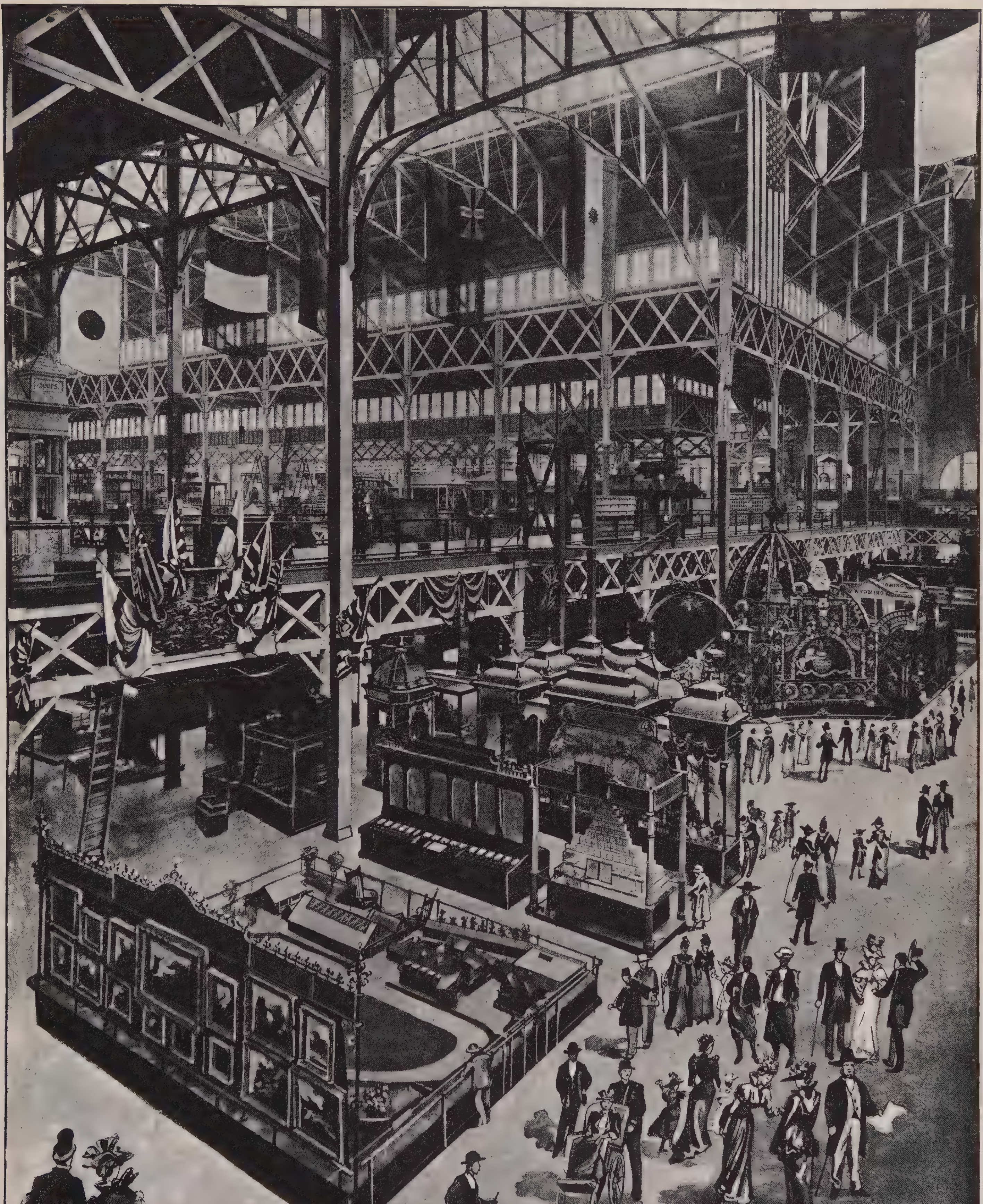
one under the auspices of the Netherlands Society of Manufacturers. At Brussels and Ghent industrial expositions have been held at intervals since 1856, for the most part of a local character.

In Russia, fairs are still of frequent occurrence, widely distributed as to location, and of origin so remote as long to antedate those of other European nations. From time immemorial Russian merchants were accustomed to meet those of eastern countries at some point on the middle Volga, the site of the principal fair changing several times from the middle of the tenth century, when it was held in Bakhrimovo, until early in the nineteenth, when it was transferred to its present seat at Nijni Novgorod. At the first of these latter fairs in 1817, it was estimated that goods to the value of $27,000,000 changed hands, the amount increasing to $371,000,000 in 1880, and with an attendance of more than 130,000 traders, gathered from a region extending westward beyond the Russian borders, and eastward into the heart of Asia. The principal commodities include manufactures of all kinds, especially iron and iron wares, with fabrics of cotton, linen, wool, and silk, with furs, skins, and leather, and with flour, fish, salt, tea, wine, brandy, and other articles of luxury and necessity. The prices of many classes of goods, and especially of textile manufactures is determined throughout central Russia by those established at the Nijni fair, as is also in part the amount of production, especially of iron and its manufactures. Fairs at Kiakhta, on the Chinese border, have lost much of their importance within recent years, as the result of the increased facilities of communication and the abolition of monopolies formerly held by Kiakhta merchants. Elsewhere in Siberia fairs are numerous, by largely taking the place of legitimate commerce in this remote and sparsely populated region. In 1860, and again in 1870, industrial expositions were held at St Petersburg, and two years later one at Moscow, the latter illustrating the progress of Russian manufactures. All were on a limited scale, and of a purely national character.

The internal commerce of Turkey is mainly conducted by means of fairs, and is almost entirely in the hands of aliens, the Turks devoting themselves to agricultural and pastoral pursuits, though even from these they are being gradually excluded as their lands pass into the possession of foreign mortgagees. Among the more important is the one held at Usundji, in Roumelia, at which the manufacturers of western Europe are largely represented. In modern Greece fairs are equally numerous, and at such gatherings held at many a point of historic interest, as at Pharsalia in Thessaly, the Greek trader still displays the shrewdness and business acumen for which he was noted in the days of Pericles. At Athens a national exhibition was held in 1859, and in 1863 one at Constantinople, at which, in addition to Turkish products, there were also exhibits of foreign machinery.

In Italy the principal fair and festival, held in July and August of each year, at Sinigaglia, in honor of St. Mary Magdalen, is attended by thousands of traders from southern and central Europe, and even from northern Africa. The wares exposed for sale consist mainly of silk and silken fabrics. In Florence was held in 1861 an exhibition of Italian industries, agriculture, and arts; but though the art collection and the display of agricultural products peculiar to northern and central Italy were varied and rich, they failed to attract more than a local interest. Previous expositions held in Italy, including one opened at Naples some years before, were devoted almost entirely to agricultural exhibits. At Turin was also a display of Italian products

EXPOSITION BUILDINGS, TURIN



AGRICULTURAL HALL. COLUMBIAN EXPOSITION, 1893

ANCIENT AZTEC LAND

in 1870; at Naples in the following year was an international maritime exhibition, and one at Milan of selected branches of industry.

In Spain, the most popular of her fairs and feasts is opened on the 15th of May in each year, at the hermitage of San Isidro del Campo, when such crowds assemble from far and near as no other Spanish festival has the power to attract. Except for a small display of industrial arts at Madrid, in 1854, nothing was attempted in this direction until 1891, when provision was made by royal decree for a series of international celebrations in honor of the fourth centennial anniversary of the discovery of America. Among them the most prominent were the Exposicion Historico-Americana, and the Exposicion Historico-Europea, to be opened simultaneously toward the close of the following year. The former was intended to illustrate the civilization of Spanish-America from the close of the fifteenth to the middle of the seventeenth centuries, a period which included the earlier efforts at colonization and settlement. This exhibit also purposed to represent the condition of the native races, their dwellings, arms, utensils, customs, and characteristics, together with the effect of European discovery, influence, and conquest In the Historico-European Exposition it was purposed to display the connection between European and American history from the year 1492, when the caravels of the great navigator anchored off Española, until in 1620 the pilgrim fathers set foot on Plymouth rock. In connection with these exhibitions other celebrations were held, of which the most interesting was the one at Huelva, consisting of a scientific, artistic, and literary congress, followed by festivals and naval demonstrations.

Turning to our own continent, we find that, early in the sixteenth century, fairs were held by the native tribes of Mexico and Central America at all the larger towns, where agricultural and manufactured commodities were exchanged or sold to itinerant traders. To the Nahua nations stores and shops were unknown, but in their place were daily markets, at which articles of all descriptions were exposed for sale, with special markets or fairs at least once a week, and attended not only by local patrons but by merchants from all the country round. At each of the two market places in the ancient city of Mexico it is said that 100,000 people were not infrequently present, while at the suburbs of Tlatelulco was one larger than that at Salamanca, exciting the wonder of the Spaniards at the variety of wares exhibited and at the perfect order maintained. Here might be seen every species of the native fabric, with countless specimens of feather and metal work, in which the Aztecs excelled, with utensils and weapons, household furniture, provisions of all kinds, both cooked and uncooked, and an assortment of all the manifold products of pre-historic Mexico. By judges of the commercial tribunal disputes were settled, prices and measures regulated, and attempts at fraud or extortion severely punished, while the disorderly element was held in check by watchmen acting under their authority, by whom also taxes were collected on the several classes of merchandise.

After the Spanish conquest daily markets continued to be held in all the larger towns, with fairs at the leading centres of commerce, held at certain seasons of the year. To Jalapa was transferred, in 1820, the annual fair before held at Vera Cruz on the arrival of the fleet from Spain, goods to the amount of $30,000,000 changing hands on such occasions, and the influx of wealth causing the inhabitants to change their simple mode of life for the habits, and too often for the vices, of the Spaniards. At these gatherings, wherever held, was conducted a large proportion of the commerce of the surrounding country, raw and manufactured products being exchanged for linen and other goods, and

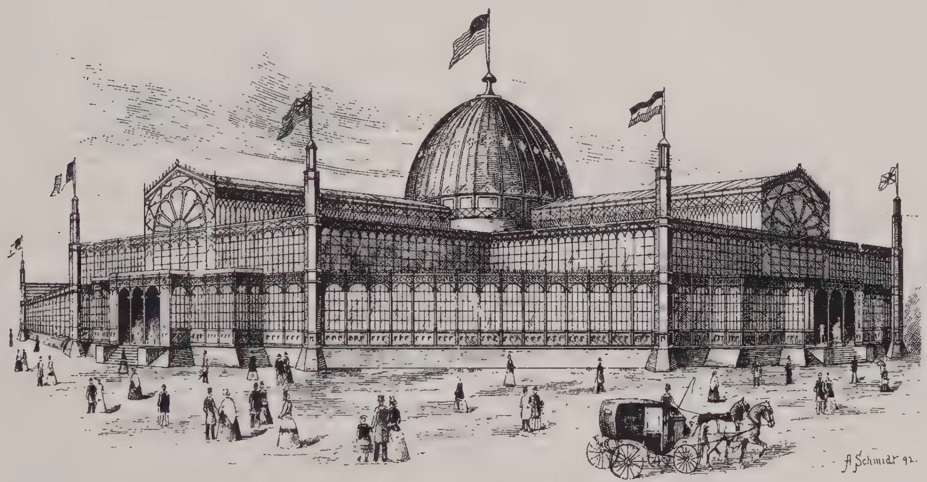
MODERN MEXICO

oil and wine, together with cheap and gaudy trinkets, disposed of at enormous profits. After a day passed in driving bargains, the night was given over to gambling and carousal, not infrequently attended with loss of life. Other fairs there were of a religious nature, as at San de Los Lagos, where throngs of devotees, assembling for worship at the shrine of the Virgin, mingled with the merchants and traders.

Within more recent years fairs and exhibitions have been held under the auspices of the general and local governments, some of them of a national character, representing agricultural and manufacturing industries and works of art, while others were limited to the products of individual states. At brief intervals, beginning with 1849, there were general exhibitions in the city of Mexico, and a project for an international fair, to take place in 1880, was favorably received, but was finally postponed. Meanwhile our sister republic has been well represented at several of the world's expositions, as at those held in Paris in 1855, in Philadelphia in 1876, at St Louis and Chicago in 1879-80, and at New Orleans in 1884-85, at all of which a number of medals, diplomas, and honorable mentions were awarded to her exhibits.

Among the many nations of Central America periodical fairs were held at all the larger towns, at which a multitude of traders assembled from the country round. At the smaller towns and villages were also fairs, at which articles of food and dress, weapons, ornaments, and implements, with other commodities of various descriptions were exposed for sale in the market place or public square, all transactions being regulated by a public official, whose duty was to correct abuses and punish those who attempted to violate the established laws of trade.

As to the other native races of the North American continent, few of them appear to have held either markets or fairs, or indeed to have possessed any form of distributing agency. Some exceptions there are, however, as the Eskimos, among whom, in addition to local fairs there are others, established probably soon after the Russian occupation of Alaska, at which furs are exchanged for European commodities.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WORLD'S FAIR NEW YORK. 1853

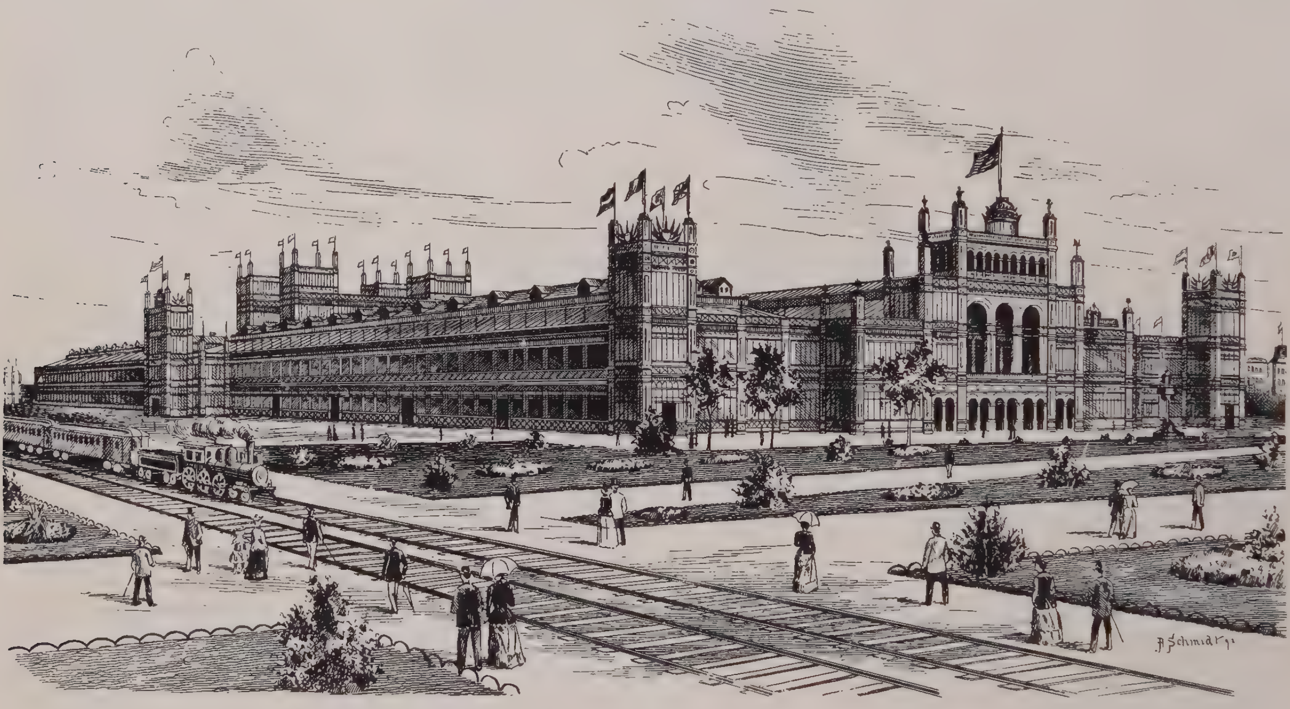
In Peru fairs were held in the days of the Incas at some of the more populous towns, where traffic was conducted merely by the interchange of products; for to the Peruvian, Indian trade in its proper sense was unknown; nor have any traces been preserved of the existence of foreign commerce. With the use of money, in whatever shape, they were entirely unacquainted, though from its mines were to be drawn the treasures which, for centuries after the conquest, should furnish the civilized world with the bulk of its metallic currency.

Among the modern Peruvians it does not appear that the fair was ever a favorite institution, and it was not until July, 1872, that the first national exhibition, on an extended scale, was opened under the auspices of President Balta. It contained a good display of native art and industry, among other objects of interest being a picture representing the funeral of Atahualpa, from the hand of a Peruvian artist, and some excellent statuary carved in alabaster, the work of Indian sculptors. One of the acts of vandalism committed by the Chilean invaders was the destruction of the gardens of this exposition, afterward partially restored to their former condition by an association organized for the purpose.

In the United States the word fair is commonly applied only to such industrial exhibitions as are held for the encouragement of agriculture, manufactures, and the mechanic arts. Our first agricultural fair took place at Washington in 1804, and was repeated semi-annually for several years thereafter. Gradually the fair began to be recognized as an American institution, and since that date has spread to almost every state and county in the republic. The first of our international expositions was held at New York in 1853, followed by one in 1865 at Philadelphia, the display consisting mainly of specimens of American produce and industrial skill. While recognized by the government and by several foreign powers, the former was stamped as a private speculation under the guise of a patriotic movement. So at least it was regarded by rival cities, though at the opening ceremonies commissioners were present from all the European participants. Another drawback was that, through some mismanagement, its doors were not opened until the hot season, or several weeks after the appointed time. The building was planned and named after the Crystal Palace of 1857, but on a minor scale, and with certain original features in the design. Among the more interesting exhibits was the display of machinery, in which department the United States excelled all other participants as to number, quality, and variety.

Such minor expositions have doubtless proved beneficial in promoting improvements in farming, horticulture, and stock-raising, and also in banding together these interests to defeat the machinations of speculators, middlemen, ship-owners, and railroad corporations. Partly to their agency was due, for instance, the establishment, in 1867, of the national grange, whose operations extended, a few years later, over 30 states, with 1,400,000 members, and $18,000,000 of capital invested in warehouses, elevators, and factories dependent on agriculture for their supplies of material. By this grange agencies were established for the interchange of products in every section of the republic, and to its patrons the most recent and reliable information was furnished as to the condition of markets and crops.

With the approach of the centennial year came a general desire to celebrate this anniversary of the nation's birth in a manner befitting her material greatness, and in such fashion that all other countries might participate. For the purpose there could be no more suitable location than the city in which the Declaration of Independence had been adopted and proclaimed; and hence it was determined to hold in Philadelphia, in 1876, on a scale that had never before been witnessed, the Centennial Exposition of the World's Industries. The first step was taken in March, 1871, when, by act of congress, a Centennial commission was created, in which all the states and territories were represented, and in the following year a Centennial board of finance. Soon afterward invitations were forwarded to the governments of all the civilized nations of the world, and were very generally accepted, England, whose participation was at first regarded as doubtful, sending a collection of paintings valued at more than $1,000,000, with other exhibits of infinite number and variety, representing all her leading industries. Such, indeed, was the demand for space, that special buildings were erected, not only for several of the foreign exhibits, but for those of states and territories, and even of individuals, so that in all there were more than 150 edifices, built at a cost of at least $7,500,000, and covering an area of 60 acres, with 1,000,000 square feet allotted as the exhibiting space of the United States, 200,000 to Great Britain and nineteen of her colonies, including the dominion of Canada; to France and her colonies 100,000, and to other countries in smaller proportion.



WORLD'S FAIR, PHILADELPHIA, 1876

The site selected was a wide level space in Fairmount park. In the grounds adjacent were wooded dells, ravines, and waterfalls, which, together with the venerable oaks that dotted the lawn-like expanse of turf, gave to the location a strong element of the picturesque. The main building, of brick and glass, with wrought iron columns and roof, was a stupendous structure, and one remarkable rather for immensity than for beauty of design. It was more than a third of a mile in length, and nearly a furlong and a half in width, with an interior height of 70 feet, and a floor area exceeding 70 acres. The grand avenue, over 600 yards in length by 40 in width, was probably the longest ever planned in an edifice of this character. There were also side and transverse avenues, and in the centre a vast open space, on which fronted the displays of the leading nations, the exhibits of the United States occupying double the area allotted to all other nations. Next in size were the Machinery hall, covering 15 acres, and the Agricultural hall, with a floor space of somewhat over 10 acres. The Memorial hall, a massive structure of granite, and the Horticultural hall, of iron and glass, in the Moorish style of architecture, still remain on the ground, the former as a permanent representation of industrial art, and the latter containing a

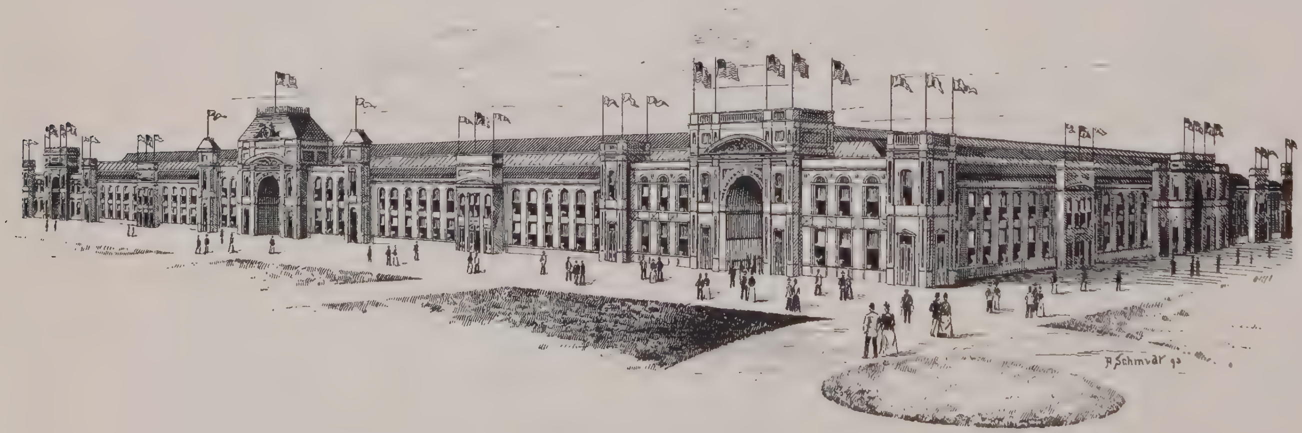
HORTICULTURAL BUILDING, COLUMBIAN EXPOSITION, 1893 choice collection of exotic plants. Others worthy of mention were the Woman's pavilion, in which was for the first time represented at a world's exposition an isolated exhibition of woman's work, and the Government building, where were illustrated all the functions of the United States government in time of peace, and its resources in time of war.

As to the character of the display, it may be said that in variety and value, in magnificence of design and beauty of combination, it had never before been excelled. To the outside world this representation of the marvellous industrial progress of the United States was in the nature of a revelation, and especially as to manufactures, machinery, and labor-saving appliances, in all of which were surpassed the exhibits of European countries. In the fashioning of weapons and munitions of war she also taught them lessons which they were not slow to lay to heart. To all the industries of the country this exposition gave a decided impetus, opening to our products the markets of the world as they had never before been opened. The years that have since elapsed have been marked by more rapid development than any in the nation's history, and in no small measure must this result be attributed to the influence of the Centennial Fair. But while in the mechanic arts we had little to learn from foreign exhibits, it must be admitted that in the fine arts, and in the artistic embellishment of articles of ordinary use, we were below the level of other communities. If in this particular we were aroused to a sense of our deficiencies, this was not the least important result of an enterprise than which our industrial annals contain no more interesting feature.

Not only in the multiplicity and excellence of its exhibits, but in the area of exhibiting space, in the number and size of its buildings, in its receipts, and with one exception in the number of visitors, did the Centennial Exposition surpass all previous efforts. Here were represented by thirty-seven different nations, and by nearly 31,000 exhibitors, the choicest agricultural and manufactured products, and the most recent and valuable discoveries and appliances in the field of science, that have ever been gathered from the vast storehouse of human industry and experience. If in their art collections and in some minor features the exhibitions held in London, Paris, and Vienna were deemed superior, none have been more widely appreciated than the one which, on the 10th of May, 1876, threw open its doors to the most cosmopolitan assemblage ever gathered on New World shores. During the six months of its existence the average attendance exceeded 62,000 a day, or nearly double the average at the great European expositions, and with a total attendance of 9,911,000, the largest recorded up to that date, except for the Paris Exposition of 1867, which, keeping open doors for some two months longer, attracted about 300,000 more visitors. On the 28th of September, or Pennsylvania day as it is termed, the admissions were 276,000, the greatest number thus far recorded in the history of international expositions.

Out of 13,104 awards, 5,364 were distributed among 21,689 foreign participants. The plan adopted on this occasion differed from all previous methods, substituting for the jury system a number of judges, of whom one-half were foreigners, and all were men of repute, experience, and ability. There were no graduated awards, but simply medals of merit and not of superiority, the reports of the judges alone indicating the comparative qualities of such exhibits as were deemed worthy of this distinction.

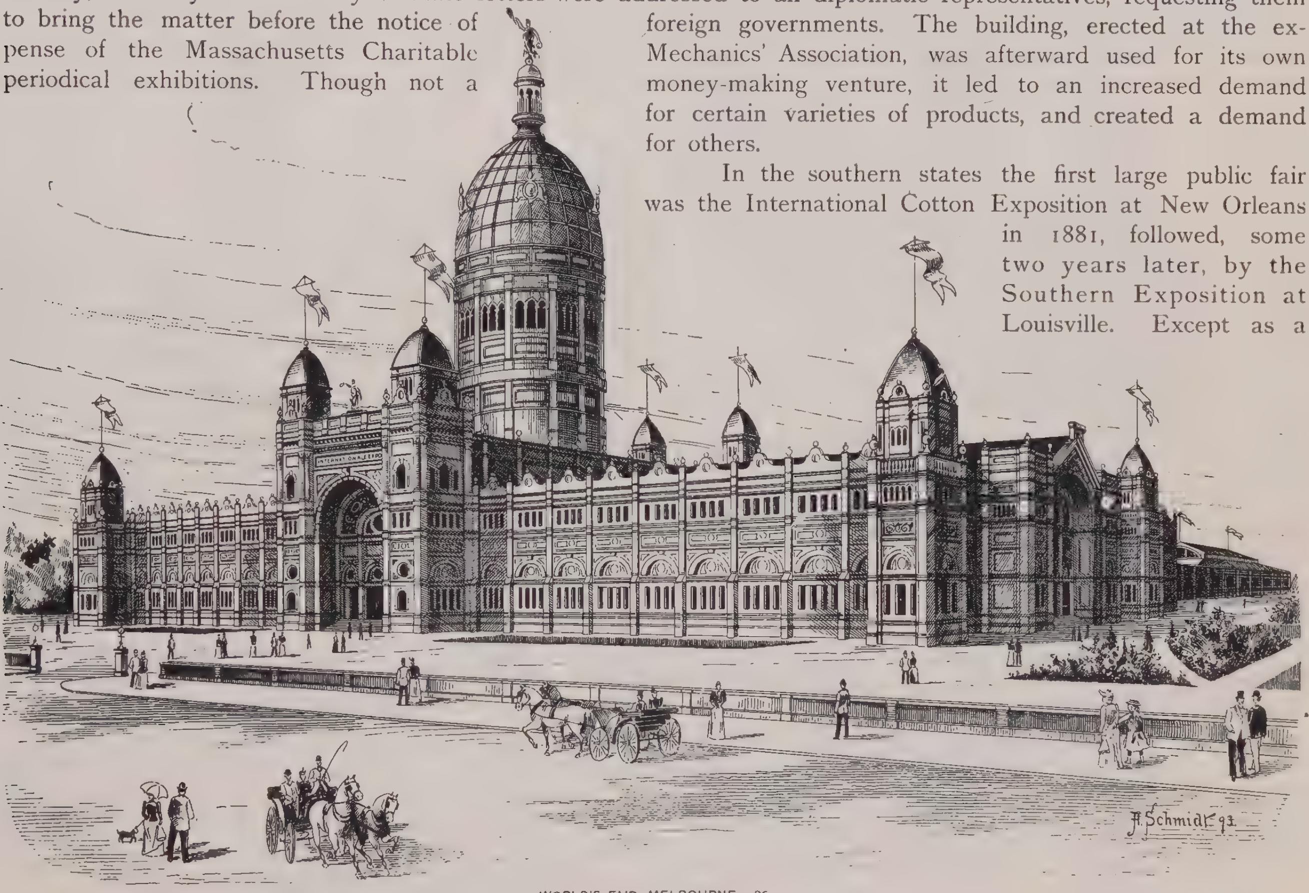
From a financial point of view the Centennial Exposition was a failure, as were all the previous world's fairs, with the exception of those held in London. The total cost was stated at $8,000,000, and the entire receipts at $4,300,000, a somewhat discouraging result, but one that compares favorably with several former exhibitions. Moreover, the loss was not felt, or if felt was indirectly more than repaid to those among whom the funds were contributed, including the citizens, corporations, and city council of Philadelphia, the state legislature, and the national government, the last advancing, as a loan, $1,500,000, secured by a lien on the proceeds, but afterward cancelled.



WORLD'S FAIR NEW ORLEANS, 1884

It is not, however, on the basis of dollars and cents that the success of such an undertaking can be estimated. Far above this is its industrial effect in stimulating our people to a yet more intelligent rivalry with European nations, in showing to those nations what has been accomplished and what is to be expected from American enterprise, in overcoming their prejudices, and opening among them a wider market for our products. Nor have all traces of the Centennial Exposition disappeared with the dispersion of its exhibits. In Philadelphia its records remain in the Memorial and Horticultural halls, while at the national capital the display of the United States government is still preserved intact, and to this have been added the government exhibits of nearly all foreign participants, forming with other contributions the nucleus of the national museum at Washington.

In Boston was held in 1883, with the somewhat ambitious title of The American Exhibition of the Products, Arts, and Manufactures of Foreign Nations, the smallest of our international expositions, and yet with the largest number of foreign participants, though, apart from the Chinese and Japanese sections, the exhibits contained little of special interest. It was purely a local enterprise, conducted by some of the leading citizens of Boston, but with government sanction, an act of congress permitting the introduction of exhibits free of duty, while by the secretary of state letters were addressed to all diplomatic representatives, requesting them to bring the matter before the notice of foreign governments. The building, erected at the expense of the Massachusetts Charitable Mechanics' Association, was afterward used for its own periodical exhibitions. Though not a money-making venture, it led to an increased demand for certain varieties of products, and created a demand for others.

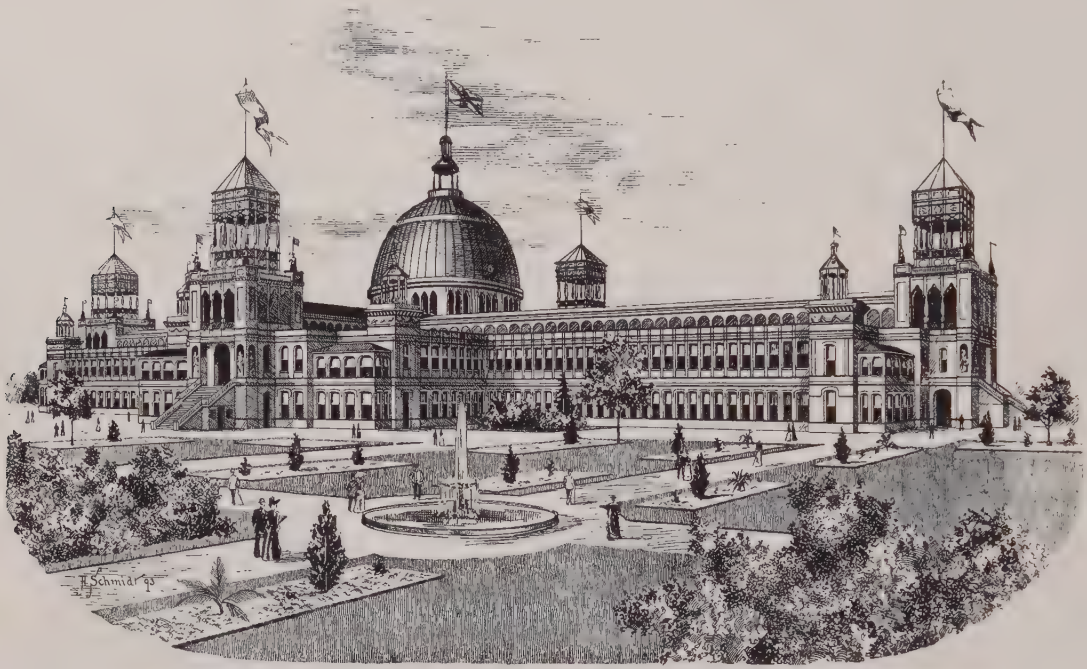


WORLD'S FAIR, MELBOURNE, 1865

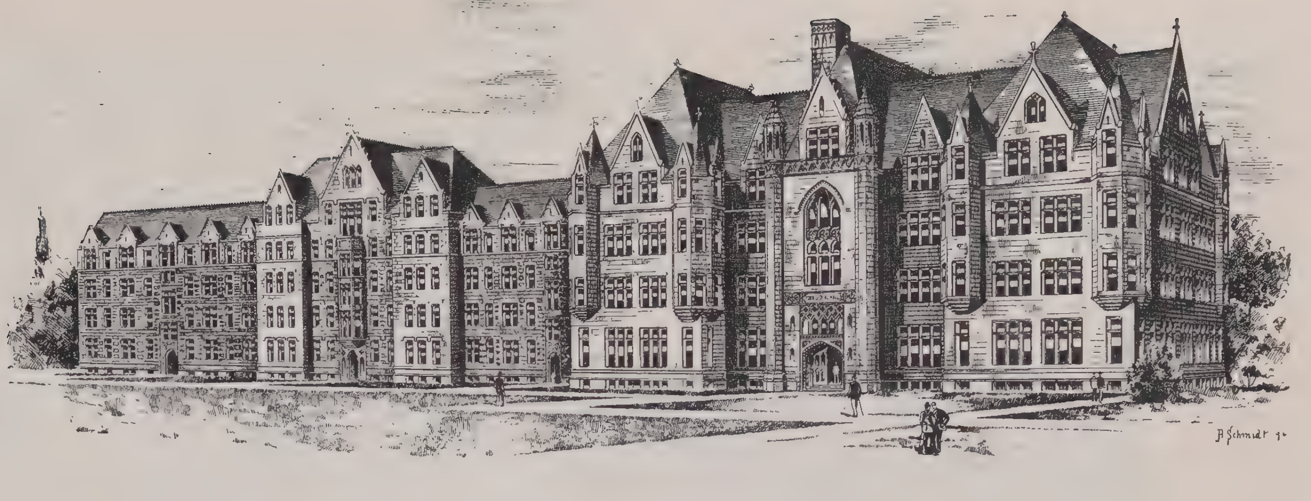
In the southern states the first large public fair was the International Cotton Exposition at New Orleans in 1881, followed, some two years later, by the Southern Exposition at Louisville. Except as a display of southern products they were not of special interest, northern and foreign exhibits being few in number, and of inferior quality. Both were, however, introductory to the World's Industrial and Cotton Centenary Exposition opened at New Orleans in December, 1884, the word centenary referring to the inception, in 1784, of our commerce in cotton, when a few bags were shipped from Charleston by way of experiment. In addition to a most interesting show of southern staples, there were valuable exhibits from the northern states, and from the several departments of the national government, all classed in twelve divisions, including among others agriculture, horticulture, manufactures, and mining, together with works of art and illustrations in natural history. Foreign countries were but poorly represented, except Mexico, whose collection of exhibits, occupying a floor space of several acres, was the finest ever displayed by our sister republic. The main building, glass roofed and constructed entirely of timber, covered even a larger space than that of the Centennial Exposition and with a music hall in its centre capable of seating 10,000 persons. In the grounds were also many attractive features, among them groves of citrus and other sub-tropical fruit trees.

While the larger civic exhibitions have been limited to Europe and the United States, there have been minor expositions at many of the great centres of wealth and population in other quarters of the world. At Madras was held, in 1852, an exhibition of native industry; at Calcutta and Lucknow, in 1864, of agricultural products; at Dunedin, in 1865, of colonial products; at Rio de Janeiro, in 1866, of raw produce; at Melbourne, in the same year, was an intercolonial exposition, in which mineral specimens were a prominent feature; at Agra, in 1867, was one at which the industries of northwestern Hindostan were represented; at Sydney, in 1870, an intercolonial exhibition with nearly 3,000 exhibitors; and an international exhibition in 1879, at which the United States and several European nations were represented; at Kioto, Japan, between 1872 and 1876, was a series of exhibitions of Japanese art and manufactures; and at Cape Town, in 1877, an international exhibition of home and foreign manufactures.

In concluding this sketch of fairs and international expositions, it may be remarked that as to their educational value there can be no difference of opinion. Little more than four decades have elapsed since the first one was opened in London in the spring of 1851, and during the intervening years in this the heroic era of the world's progress, much of our marvellous achievement in all branches of science and art has been due to these potent factors in the civilizing influences of the age. By bringing the nations of the earth into closer intimacy, by destroying their prejudices, and showing them that in some directions each can learn of the other, a generous rivalry has been inaugurated, with improvements in methods and appliances, and a redundancy of inventions such as has never before been witnessed. And to the fine arts, no less than to the mechanic and industrial arts, do these remarks apply. Even the self-confidence of the Briton gave way when the exhibit of 1851 taught him how inferior were his goods in artistic design and finish, causing in this respect a revolution in many branches of British manufacture. And since the Centennial Exposition revealed to us our own defects, more progress has been made in this direction than for half a century before, causing almost a renaissance in art and its application to articles of common utility.



WORLD'S FAIR, SYDNEY, 1879

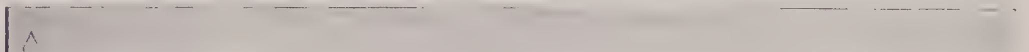


CHAPTER THE SECOND

HISTORICAL SKETCH OF CHICAGO

IT has been said that of all the marvels of the Chicago Exposition, the most marvellous is Chicago. However this may be, certain it is that the attention of the thoughtful visitor is attracted first of all to the city whose builders thus invite and entertain the world of civilization as their guest. It seems therefore eminently fitting, before proceeding with the subject matter of this work, to present in briefest outline the history and condition of the place on which for the time is thus fastened the minds of men.

By a certain engineer employed by the government in the opening years of the present century on a survey of Lake Michigan, it was reported that there was only one spot on the shore of that lake where a city could not be built. On this very spot stands the business quarter of Chicago, a city ranking to-day the second in the United States as to population, the first in relative progress, and one of the first in volume of commerce and of wealth. But if it were possible to behold the site of Chicago as it then existed, it would be seen that the engineer was by no means without good reasons for his statement. Here the prairie lands terminated in a wide morass, covered with rank, malaria-breeding vegetation, while in the centre of the tract a sluggish stream, the present Chicago river, overflowing at times the low, bare plain adjacent, served but to render still more desolate this abode of desolation. It was, in truth, as if nature, wearied with the work of creation, had here left over her last unshapen fragment.



BRANCH OF CHICAGO RIVER

By the Jesuit annalist, Charlevoix, is mentioned the arrival in 1671 of a fur trader named Perrot, on the southwestern edge of the lake, amid the lands then occupied by the Miamis. Here is probably the first historic mention of Chicago, or rather of its site, for as yet no building stood on the shore of Michigan. Some two years later a survey of this region was made by Louis Joliet, an agent of the governor of New France, as was then termed the boundless territory of the far northwest. By him was traced on a rough map the course of the Chicago, or as it was then called the Chacaqua river, the latter being the Indian word for thunder, and from which is probably derived the name of our mid-continent metropolis, though by some its origin is traced to Checagow, or Chekagou, an onion, for onions grew plentifully along the banks of the stream. With Joliet went the Jesuit priest, Marquette, whose attempts to convert the natives were cut short by malaria. He was followed at intervals by others of his cloth, who, under the spur of religious enthusiasm, seeking to plant in these wilds the banner of the cross, found a martyr's grave on the banks of this fever-stricken creek. Meanwhile a few traders made their appearance, whose stay was of the briefest, and for years at a time the site of Chicago remained untrodden by civilized man.

MICHIGAN AVENUE. AUDITORIUM

The first real settler appears to have been a negro, a fugitive slave, who about the year 1779 built a cabin on the bank of the creek, and established a thriving business as a fur trader, though his main object was to establish here a home of refuge for his unfortunate countrymen. But this benevolent purpose he appears to have abandoned, for not long afterward we find his cabin in the possession of a Frenchman named Le Mai, by whom it was again transferred to one John Kinzie, the latter, for the part which he bore in the earlier history of the settlement, being styled the father of Chicago. Near by a few traders had settled, and with a view to counteract British influence among the neighboring Indian tribes, in 1804 Fort Dearborn was built, around it clustering for mutual protection the pioneers of the future metropolis. Thus matters continued until in August, 1812, almost the entire garrison, with a number of women and children, were massacred by the savages; the fort and its adjacent buildings were destroyed, and again over the scene of this tragedy brooded the desolation of the wilderness. Inserted in the wall of a warehouse on Michigan avenue, near the Chicago river, is a large marble tablet, on which is a picture of the blockhouse of Fort Dearborn, with the log fence which inclosed it, and a brief description of its history, presented by a public-spirited citizen at the suggestion of the Chicago Historical Society. In 1816 the fort was rebuilt; but thenceforth its annals contain nothing of importance until, in 1871, the last vestige was swept away in the sea of flame that all but devoured the great city by which it was encircled.

In 1818, when Illinois was admitted to statehood, Fort Dearborn was known, where known at all, as a small frontier post, outside the pale of civilization. Some five years later, when first the tax-gatherer made his appearance in the farthest west, the entire property of the settlement was assessed at somewhat less than $2,500, the men of Fort Dearborn contributing $11.40 as their share of the county expenses. At this period its handful of inhabitants lived in utter isolation, save that once a year a schooner, dispatched by John Jacob Astor, called with a cargo of supplies, and bore away its annual tribute of furs, while two or three times a month a mail rider brought to this outpost in the wilderness the tidings of the world from which it was separated.

About the year 1830 the settlement began to display symptoms of vitality, and in August of that year, under the auspices of the Illinois and Michigan canal commissioners, a corporation empowered to lay out towns on the government lands assigned to them, the original plan was issued of the town thenceforth to be known as Chicago. With the support of this powerful association progress became more rapid. In 1834, when the entire posse of the town assembled for a wolf-hunting expedition, the number of inhabitants was placed at somewhat below 2,000; in 1837, when the first census was taken, it had increased to 4,179; then, for a time, it appears to have remained almost stationary, for the United States census report of 1840 shows only a gain of 300. In 1850, however, the population had increased to 30,000, and in 1860 to 109,000, a ratio of progress without a parallel, save amid the tented cities which sprang up almost in a night on the Pacific seaboard.[1]

It was between these two latter decades, beginning with 1855, that the grade of the city was raised from about seven to an average of fifteen or seventeen feet above the level of the lake. This work was in truth a necessity, in order to provide a thorough system of sewerage, and to avoid the malarial fevers and other forms of sickness caused by the low, swampy site, a site which for years after Chicago had become a thriving commercial town was little better than a quagmire, and where, as one of her citizens remarked, "the one unequalled, universal, inevitable, invincible thing about the place was—mud." To accomplish this task the streets were filled in, and by means of jack-screws worked by steam power, not only the largest dwellings, but the largest business buildings and business blocks, together with churches, theatres, hotels, and edifices of every kind, were raised to the required elevation, and that without being vacated, whether used for business or residence purposes.

During these and other years the river was dredged and deepened, and by an extraordinary feat of engineering was made to change its course, its southern branch being connected, at a distance of two and a half miles from the lake front, with the Illinois and Michigan canal, which has also been so much deepened as to draw the waters of the lake. Discharging as it does into the Illinois river, and the latter into the Mississippi, this canal thus causes the Chicago river, instead of flowing into Lake Michigan, to find its outlet in the gulf of Mexico.[2] Harbors were constructed at great expense with lines of breakwater forming huge basins for the accommodation of shipping, one of them 300 acres in extent. In the river itself, together with its branches crossed by more than fifty drawbridges, and with a dockage capacity of forty miles, vessels of the largest class can be handled, while craft of every description pass to and fro, at times in almost unbroken line. Other bridges, together with tunnels built under the bed of the stream, connect the business quarters of the city, and relieve the crush of its constantly increasing traffic. With such enterprise and almost preternatural activity on the part of her citizens, it is no wonder that as early as 1870 we find in Chicago a city of 307,000 inhabitants, nearly threefold the population of 1860, tenfold that of 1850, and with more than a corresponding gain in volume of commerce, industries, and wealth.

But now a great disaster was about to overtake the young metropolis, one that should try to the utmost the sterling qualities of this the most fearless and self-reliant of modern communities. On a breezy Sabbath night, the 8th of October, 1871, an alarm of fire was sounded, caused by the overturning of a lamp amid the loose straw of a stable, in a section of the city built entirely of wood. Almost before the engines could get to work, an insignificant blaze was fanned into a conflagration, and far in advance of the flames firebrands were scattered broadcast by the gathering southwesterly gale. Though worn out by their task at a previous fire the night before, the firemen worked heroically, and all that men could do they did; but without avail. The flames advanced in one serried mass, devouring granite buildings as hungrily as wooden huts, and soon it became apparent that the business quarter was doomed. At midnight a sea of fire covered the west bank of the river; then laying hold of the bridges and the vessels moored to the docks, it leaped at a single bound across the stream. Half an hour later it seized on the gas works, and then swept forward with the fury of a demon, casting into the night its shafts of flame, to be swept by the storm athwart the devoted city. Presently the two columns of fire, uniting in one, traversed the very heart of Chicago, driving on before, as with the flail of the fell destroyer, the homeless and terror-stricken citizens, some of whom took refuge in the lake, as the only escape from the showers of sparks and cinders, from blazing firebrands, and from the fierceness of the heat. Toward the south the conflagration was finally arrested by blowing up a number of buildings directly in the line of its march; toward the north it was stayed only by the waters of the lake, or by lack of fuel to feed on.

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[1] It may be of interest to note here the rise and progress of some of the chief towns on the Pacific coast in connection with our view of the marvellous growth of Chicago. Beginning with a rough board shanty in 1835, Yerba Buena, the present San Francisco, had 50 inhabitants in 1840: in 1848 the population numbered 800; in 1849, 20,000; in 1850, 25,000; in 1852, 35,000; in 1860, 57,000; in 1870, 149,500; in 1880, 233,000; in 1890, 298,000. New Helvetia, or Sutter's Fort, later Sacramento, had in 1847, 300 people; in 1848, 2,000; in 1849, 5,000; in 1850, 7,000; in 1860, 14,000; in 1870, 16,000; in 1875, 24,000; in 1880, 21,500; in 1890, 26,000. Portland, Oregon, had in 1845, its two founders; in 1852, a population of 2,000; in 1860, 2,874; in 1870, 8,300; in 1875, 12,500; in 1880, 17,600; in 1890, 47,000. Victoria, B. C., had in 1852 seven independent settlers; in 1853 there were 450 white people; in 1861 3,500; in 1863, 6,000; in 1881, 12,000; in 1890, 20,000. Between the Mississippi river and the Sierra Nevada during the earlier part of this epoch, all was primeval wilderness, and a great part of it desert, save the Mormon settlement whose chief city by the Great Salt Lake had in 1848, 2,000 people; in 1850, 6,000; in 1852, 10,000; in 1860, 14,000; in 1880, 21,000; in 1890, 45,000. If at any one time the population of San Francisco was greater than that of Chicago, it was in the autumn and winter of 1849, when the unprotected miners flocked to the cities to escape the rains; or in 1852, when the flush times had reached their height; but all this was a fictitious rather than a genuine population.

[2] It sometimes happens, however, especially during heavy spring freshets, that the volume of water is so great as to reverse the current, sending the sewage of the city into the lake and thus unfitting its water for drinking purposes. To overcome this difficulty, a channel 100 feet in width and fourteen feet beneath the low water level of Lake Michigan, is now being cut from the south branch of the river to Joliet, 36 miles distant. It will discharge fully 300,000 cubic feet of water per minute, and it is believed that with this broad and deep canal completed, no emergency will arise threatening the drinking supply of Chicago which cannot be more than met. The channel, which, it is estimated, will cost $20,000,000, is to be a ship as well as a drainage canal.

Of the many distressful incidents which marked the progress of the fire, and the days of black despondency which followed it, only a few need here be related, and those in the briefest of phrase. Thousands remained near their homes until the flames approached the last bridge over which escape was possible to the opposite side of the stream. Then came a general rush, which soon developed into a panic, and the bridge was choked with a frenzied mass of humanity, struggling for life. The strong pushed aside the weak, and hundreds were crowded over the rail-guard into the river, while horses, driven frantic by blazing firebrands falling on their backs, broke loose from harness and trampled under foot whatever was found in their way.

Forth from the houses rushed terror-stricken men and women, leaving behind their jewelry, their silk dresses, seal-skin sacques, and other costly garments strewn at random on the floor. In a deserted chamber of one of the principal hotels was found a canary bird, singing merrily in his golden cage, illumined by the approaching flames as with the glare of noon-day. To save valuable effects fabulous prices were offered to truckmen, as much as $500 being paid for a single load. Not a few of these carriers, effacing their license numbers to escape detection, drove off with the goods, and the price paid for the load as well. The cells in the basement of the courthouse were filled with murderers, burglars, footpads, and criminals of every degree. These, as the flames approached, it was determined to release, all except the first, who were conveyed to a place of safety. Then it seemed as if hell itself was let loose; for to the horrors of the conflagration were added the yells and curses of gangs of malefactors, rushing to and fro in search of plunder, almost without check or hindrance. Crime was rampant; the police were helpless, and for a time all respectable persons were permitted to carry arms. To prevent further destruction of property, not only by criminals, but by those who had been driven insane from its loss or from other causes, martial law was proclaimed, and throughout what remained of the city notices were placarded that persons caught under suspicious circumstances would be shot at sight. Private citizens were drafted into service as watchmen, soldiers patrolled the sidewalks, and after nightfall all civilians were compelled, at point of bayonet, to keep in the middle of the street.

STATE STREET

The destruction of the waterworks created a water famine, and residents of the west side, shut off from the lake by the burning district, were compelled to drink the stagnant water of the nearest pond, distributed by peddlers at five cents a glass. The explosion of the gas works left the city in darkness, and tallow dips sold at twenty-five cents apiece, the Western Union Telegraph Company, with its $70,000,000 of capital, sending forth its dispatches by candle-light from the dingy warehouse which it was glad to secure as headquarters. By business firms enormous rents were paid for miserable accommodations. Of restaurants there were none left in the burned district, the leading restaurateur of the south side reöpening his doors in a gloomy basement which survived the wreck of the conflagration. The price of all necessaries was extravagantly high, and hundreds of families, before in prosperous circumstances, were left without shelter or food, save for what could be obtained at free soup-houses, established by the authorities through fear of bread riots.

As the destruction wrought by the fire has been tersely described, "Between the existence of a city and of none a single night intervened." Except for the burning of Rome by Nero, and of Moscow by the Muscovites, few more sudden or stupendous calamities have befallen any city of ancient or modern times. Within less than twenty-four hours the conflagration had swept through more than three square miles of the most populous portion of the metropolis; it had destroyed more than 17,000 buildings, and more than 70 miles of pavement; it had blotted out of existence the entire business section, most of the railroad depots with their rolling-stock, most of the docks and much of the shipping, while of all the public edifices of which Chicago was wont to be proud, her courthouse and post-office, her custom-house and chamber of commerce, there remained only here and there the lurid skeleton of a wall. There were not a dozen wholesale stores left standing in the city; there were few hotels, theatres, or churches, and there was but a single bank. As to the loss in all its poignant details should first be mentioned that of 250 lives, and the rendering homeless of nearly 100,000 people. In property it was estimated at $196,000,000, of which less than one-half was covered, and less than one-fourth was paid by insurance; for such was the strain on their resources that many of the insurance companies were forced into compromise or bankruptcy. Add to this the depreciation in values of real estate, together with the temporary diversion of business, and it is probable that $250,000,000 is a moderate estimate of the damage wrought by the great Chicago fire of 1871.

It is not my purpose further to describe the horrors of that Sabbath night, or the blank despair which, darker even than its funeral pall, overshadowed the desolated city. After the lapse of well nigh a quarter of a century, those among the citizens of Chicago who passed through this fell tribulation, yet speak of it as though its incidents had been burned by the flames on the tablets of their memory. But if of the calamity itself the impression is vivid and indelible, still more fresh is their recollection of the prompt and generous aid dispatched from far and near, almost as soon as the tidings were spread throughout the land. On the day after the fire came a relief train, followed by scores of others, from every section of the United States, laden with the necessaries of life, for those whom the conflagration had left without shelter, food, or clothing. In funds the total of contributions from home and abroad amounted to nearly $5,000,000, and so carefully were all contributions administered by local societies that, even at the close of 1876, a portion was still undistributed. First of all the sick were cared for; the dead were buried, and the homeless and destitute were fed and housed and clad. For more than 40,000 persons barracks were erected; for workmen tools were provided; for workwomen, sewing machines; and for all, so far as possible, employment in one form or another. Thus it is said that the poorer classes were never in such comfortable and prosperous condition as during the years that succeeded the fire.

Even by the most sanguine it was doubted whether a dozen years would suffice to restore the city to its former proportions, and yet within a single year many of the largest business structures were rebuilt, and within three years the vacant district was covered with buildings more solid and costly than those which had been destroyed. Almost before the ashes were cold the work of rebuilding was commenced, though for a time men who had conducted in warehouses of granite some of the largest business enterprises in America, began life anew in rough board sheds, built on the smoking ruins where but a few days before had stood their temples of commerce. It is in truth from the year of the conflagration that modern Chicago dates its existence, and that the city began to be built of which her citizens are so justly proud, a city as to its business quarter one of the most sightly and commodious of our great centres of traffic, and with fire limits so extended as to prohibit the erection of wooden buildings within its boundaries. In less than a twelvemonth after the fire the new buildings in course of construction covered a street frontage of nearly ten miles, and cost when completed more than $40,000,000; in the next two years a frontage of about seventeen miles was erected, but at a smaller proportionate outlay; between 1876 and 1890 some 68,000 structures were finished at a cost of $300,000,000, while for the single year of 1892 their number was nearly 13,000, and their value $64,000,000. Thus was rebuilt the Garden city on a scale befitting her rank as the commercial emporium of the west, and one of the greatest commercial emporia in the world.

When first the question was mooted whether Chicago could be restored and her business reëstablished, there were many who shook their heads in doubt, and more who, though speaking words of cheer, felt little cheer at heart. But from the east came telegrams by the hundred, bidding the merchants of the fallen city to order whatever they required, and pay for it when they could. The years between 1872 and 1878 were considered a period of remarkable business depression; but rather should they be termed a period of business rehabilitation, of solid and permanent reconstruction, as appeared during the financial crisis of 1873, when failures were comparatively few; and of all the great monetary centres of the United States, Chicago was the only one that steadily continued to pay out current funds instead of issuing certificates of deposit. Meanwhile, during this era of renewal and repair, debts were liquidated, obligations were met, new channels of commerce opened, and the balance of trade restored. In 1873, imports were no less than $300,000,000 in excess of exports, indicating somewhat of extravagance when it is considered that by this time the effects of the fire had almost disappeared; in 1878 these conditions had been reversed, exports exceeding imports by about the same amount.

He who would fully realize the commercial development of Chicago should study for a moment the causes which led to that development, first among which are its advantages of location. Less than half a century ago Chicago was, as I have said, but a frontier town with less than 5,000 inhabitants, and one little known outside its own immediate neighborhood. At that date the population of Illinois was less than half a dozen to the square mile; to-day the region within a radius of 300 or 400 miles of Chicago is one of the most densely peopled of any similar area in the United States. No longer does the city owe its prosperity to the westward tide of migration, but rather to the reflux of that tide, to its industrial and commercial refluence, to the vast grain and cattle and mining region which sends eastward to the city by the lakes its annual tribute of products, to be distributed thence to every quarter of the world.

Standing on the southwestern shore of an inland sea, this city controls the commerce of the great lake system which extends more than half way across the continent, the bulk of this commerce passing over the waters of Lake Michigan, and centring in Chicago. The shipping which enters and leaves its harbor is, as to aggregate tonnage, almost as large as that of the port of New York, while the cargoes conveyed to and fro by way of the Detroit river, most of them gravitating toward Chicago, are greater in volume, if not in value, than those which pass through the Suez canal. From a few thousand bushels, shipped in 1839 by way of experiment,—the first grain shipment of which any record remains,—the total export of cereals had increased in 1892 to more than 200,000,000 bushels, valued at about $125,000,000, with some thirty grain elevators capable of accommodating as many millions of bushels. Of lumber, the receipts for 1892 exceeded 2,000,000,000 feet, with shipments of more than half that amount. Of live-stock, the receipts for that year was estimated at $240,000,000, the three items of grain, lumber, and live-stock forming the principal items in a commerce probably exceeding $1,600,000,000 a year. But of this amount the value of manufactures was represented by $586,000,000, with more than 3,400 establishments, 180,000 operatives, and an invested capital of $230,000,000.

CHICAGO PUBLIC LIBRARY

While Chicago has travelled thus rapidly along the path of industrial and commercial progress, she has not been backward in providing for those higher forms of development which should rank above the mere pursuit of wealth. With temples of worship, with schools and colleges of every class and grade, with two universities, with academies of science and art, with scores of charitable, benevolent, and fraternal associations, with some of the best of libraries in the United States, and finally with a press almost unrivalled in enterprise and ability, it may in truth be said that Chicago will not suffer by comparison with the oldest cities of the Atlantic seaboard. Of churches there are more than 500 of all existing denominations, where every one may worship as taste or conscience dictates. From 3,000 pupils in 1855, when was issued the first report of the Chicago Board of Education, the school enrollment had increased to 152,000 in 1891; and meanwhile the school expenditure had risen from less than $50,000 to more than $4,000,000, with a valuation of school property at the latter date little short of $10,000,000. There was also a college of law, with seven medical and five theological colleges, all in excellent working condition, while at private and denominational schools and colleges there were probably not less than 50,000 pupils in attendance.

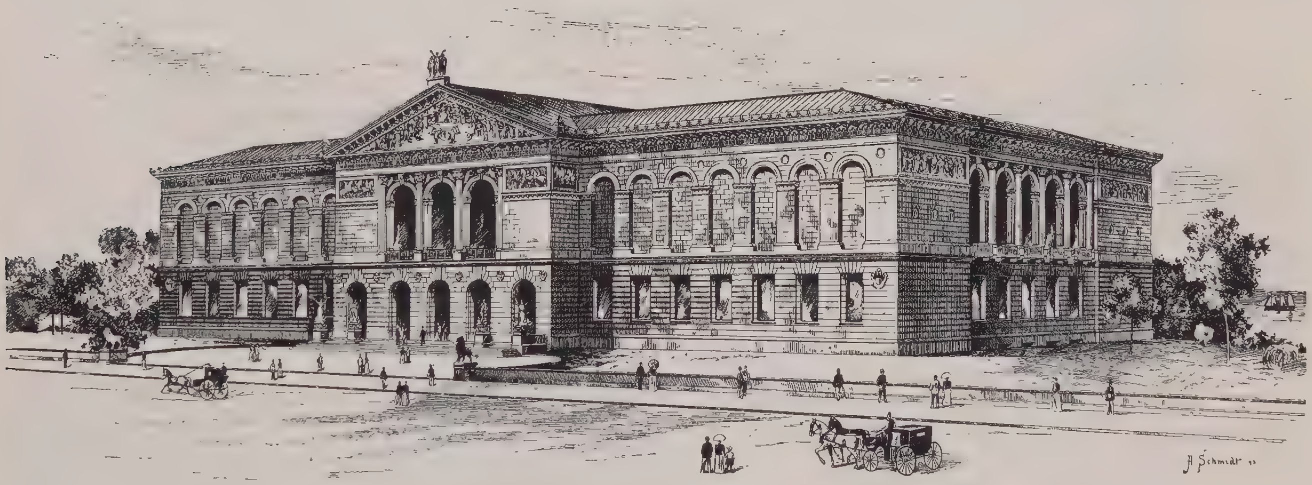
But the crowning glory of the educational system of Chicago is her University, whose scope and work may best be judged from the fact that within a few weeks after its doors were opened, on the 1st of October, 1892, there were no less than 700 pupils enrolled in its several departments. The University of Chicago is not, however, of such recent origin. Chartered in 1857 by the legislature of Illinois, and organized for active operations in the following year, its classes were continued, though under many difficulties, until 1886, when its career was cut short untimely by the pressure of financial embarrassments. At once it was determined to found a new institution on a broader and more solid basis, and in December of that year the matter was brought before the American Baptist Education Society, which promised its aid and coöperation. From some of the most liberal residents of a city noted for its liberality, including among others John D. Rockefeller and Marshall Field, contributions were secured amounting, with other funds, to more than $6,000,000 before the close of 1893.

Meanwhile, during the previous summer, work had been begun on the University buildings, all of which were to be completed, or nearly so, before the close of its natal year. Under the presidency of William Rainey Harper, formerly Yale professor of Semitic languages Hebrew and Biblical literature, a scholar and author of world-wide repute, and a man of rare executive ability, the University of Chicago will doubtless prove worthy of her high calling as the educational centre of our mid-continental states.

Of other institutions of learning, of science and of art, as the Northwestern University at Evanston, with its thirty professors and lecturers; the Chicago Athenæum, or People's College, where thousands of young men and women have been afforded the means of a liberal education, and the Chicago Conservatory, with its several departments of literature and art, I can here make only passing mention. But of the Art Institute a few words must be said, if only in answer to those who would have us believe that art in its highest sense has never found a home in Chicago.

Incorporated in May, 1879, with George Armour as president, succeeded in 1880 by L. Z. Leiter, and in 1882 by Charles L. Hutchinson, who still remains in office, the Institute was opened in rented rooms, soon to give place to a building erected for the purpose on Michigan avenue, and this again to a brown stone structure of romanesque design. The latter edifice was sold with its real estate, its museum and school buildings, to the Chicago club in the summer of 1891. The sale was effected with a view to removal, at the close of the Columbian Exposition, into the tasteful and commodious Art museum erected on its grounds, but first to be used for the meetings of the World's Congress Auxiliary, the Fair commissioners having arranged with the trustees of the Institute to apply to the purpose of construction the sum of $200,000 on condition that the total cost of the structure should be not less than $500,000, and that it should be ready for temporary occupation by May 1st, 1893. But of this building, with its right of use and occupation, a more detailed description will be given in a later section of my work.

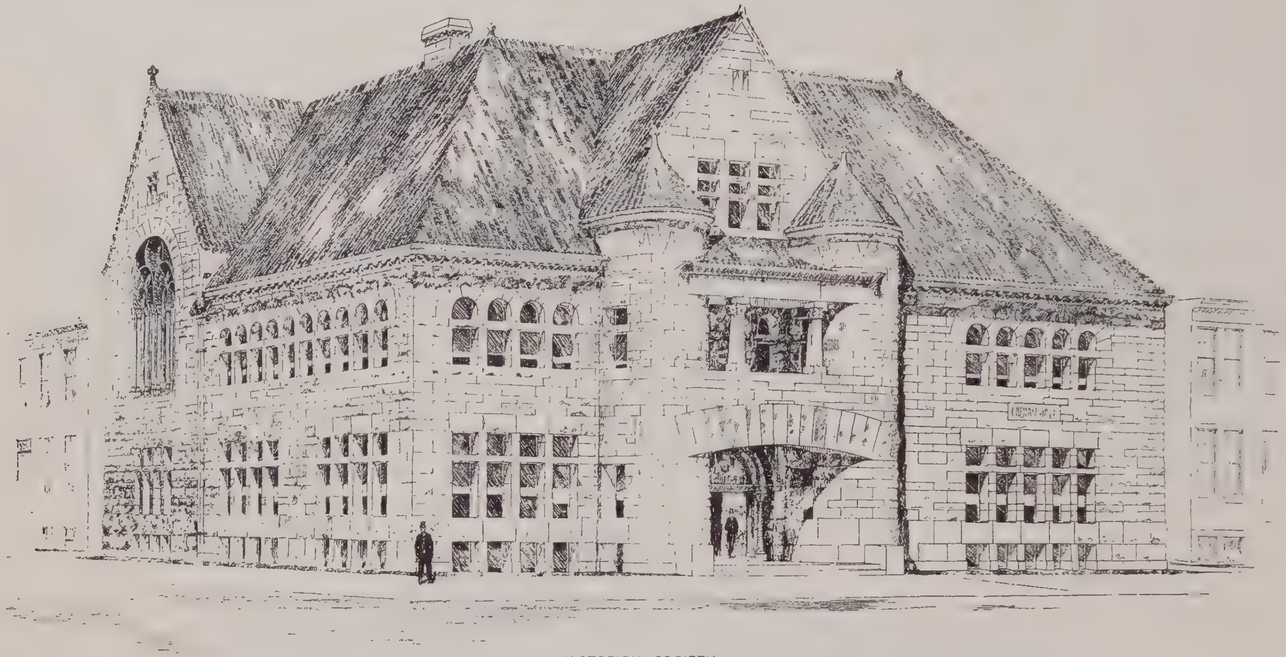
In the report of the trustees, dated the 7th of June, 1892, the membership was stated at 2,177, and the number of visitors for the preceding year at 138,511. In addition to the permanent exhibitions, there had been an unbroken series of special exhibits, with loans from some of the choicest collections in Europe and America. Many valuable pictures, statues, casts, and coins, with treatises on art and kindred subjects, had also been added to the treasures of the Institute. As to the more practical work of the Institute, it need only be said that instruction is given by a corps of professional teachers in many branches of art, including perspective and composition, drawing and painting, designing and modelling, with classes in architecture and mathematics.



ART INSTITUTE

Thus in as brief phrase as the nature of the subject permits, I lay before the reader a sketch of the history and somewhat of the present condition of the seat of the present great World's Exposition. There is here emphasized in some respects a condition of society and civilization, of intellectual and industrial activity, unique and individual. Search history from first to last, and we find no such phenomenal development, no such triumphs of commerce and manufactures, no association of men endowed with such a combination of intelligence and energy, with a nobleness of mind and liberality of heart and hand so pronounced in whatever tends to the elevation of the community, and the enlargement of the best interests of the commonwealth. Chicago has made many men, but the men must first make Chicago. And how shall I speak of the creation of Chicago? To make a city great, burn it; to make a city very great and prosperous, burn it twice. So of men; to become rich, give; to become very rich, give liberally. Among the ethics and economics which seem to govern the men who have made Chicago, sentiments like these lie latent.

He who would picture to himself the Chicago of to-day, must imagine the city extending for more than twenty miles along the shore of Lake Michigan, with 2,500 miles of streets, 2,100 acres of public parks, boulevards from 200 to 300 feet in width, and the whole being the centre of a railroad system including more than one-third of the mileage of the United States. In the business quarter he will pass between buildings from seventeen to twenty stories in height, whose upper floors, reached by swift running elevators, are utilized for business purposes almost as effectually as those on a level with the street. Entering, let us say, the Masonic temple, he will pass to the seventeenth story between endless rows of apartments devoted to office and storage use. Thence to the twentieth story are the floors set apart for the Order, with their assembly and club rooms, parlors and dining-rooms, armories and storerooms, forming one of the finest suites of lodge apartments in the world. Ascending still higher, the visitor will find himself in a glass-roofed observatory, from which, undisturbed by the ceaseless din of traffic nearly 200 feet below, he may gaze across the waters of a tideless inland sea on the low-lying shores of Michigan, and landward on the prairies of Wisconsin, Illinois, and Indiana. Beneath him he may look down on tall church spires, whose crosses appear suspended midway in air, while the streets are narrowed to a thread, along which passes in one unbroken stream the pigmy procession of humanity.



HISTORICAL SOCIETY

And the end is not yet. Great as Chicago is, the era of real greatness is yet before her. Little more than seventy years have elapsed since the site of this city was rescued from savage men and beasts; little more than twenty since she began to recover from the ruin which her conflagration wrought; yet in this brief period she has risen to a prominent rank among the commercial, industrial, and social cities of either hemisphere. Most fitting it is that an Exposition which is to represent the progress of the world in science, industry, and art, should be held amid this the most progressive of all our New World communities.

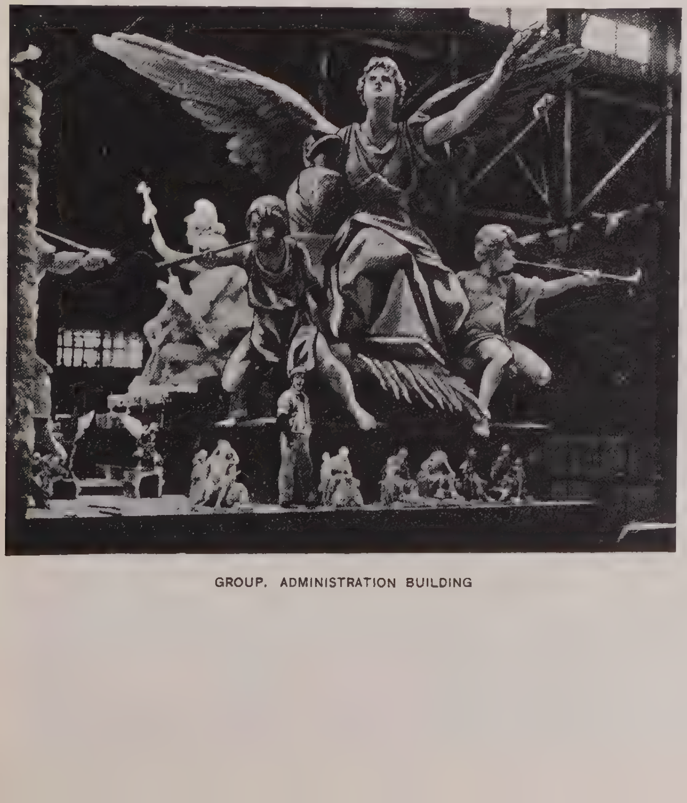
CHAPTER THE THIRD

EVOLUTION OF THE COLUMBIAN EXPOSITION

To several men belongs, and by several score has been claimed the credit of giving at least inchoative shape to the project for celebrating by an international exposition the fourth centennial anniversary of the landing of the great discoverer on New World shores. Among the former class is Carlos W. Zaremba, whose suggestions were made public about the time of the Centennial Fair. Another was George Mason, who in the autumn of 1885 brought the subject before the Interstate Exposition Company, of Chicago, of which he was then a member; but nothing tangible resulted from their propositions.

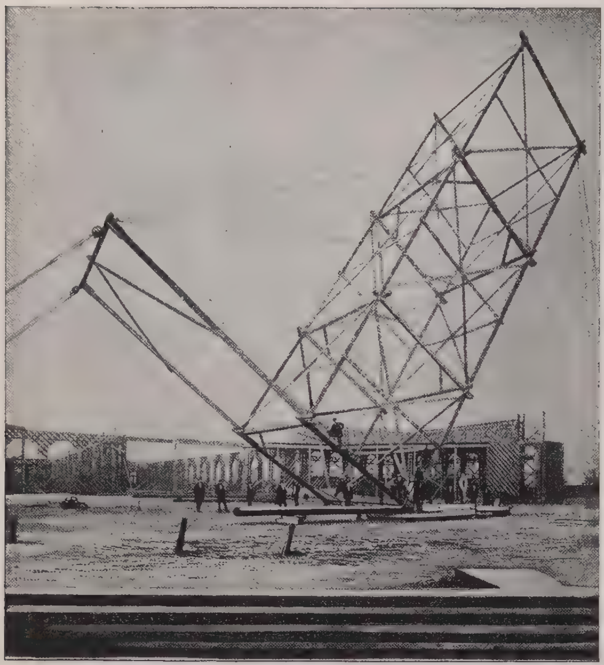
ALEXANDER D. ANDERSON

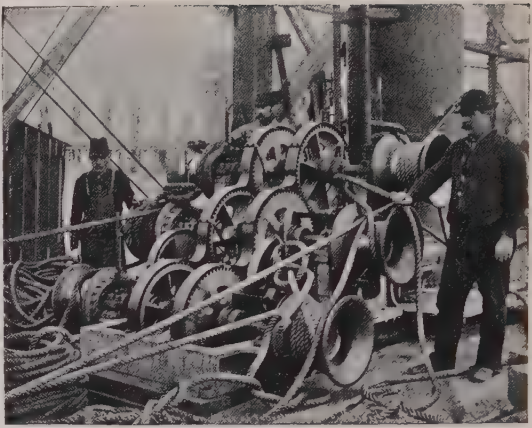
A stronger claim than either must be made in favor of Alexander D. Anderson, of Washington, who, in November, 1884 foreshadowed the project in an interview of which the results were published in the New York *Herald*. Through the local Board of Promotion, which later became a national organization, and of which he was chosen secretary, he laid his plans before congress, secured a favorable report from the committee on foreign affairs, and aroused the interest of prominent statesmen, officials, and boards of trade throughout the United States, and of foreign ministers resident at Washington. By him were forestalled in miniature the main features of the Columbian Exposition, and partly at his suggestion was afterward inserted in the original bill, intended to give to the Fair the sanction of the national government, the clause providing for the naval review in New York harbor. That he was thoroughly in earnest appears from the fact that he expended on the inception of the enterprise a considerable portion of his private means. He was cordially supported by the citizens of Washington and Baltimore. Here, however, for several years, the matter rested, except that a general plan was formulated for the erection of suitable buildings at the national capital where, as was then supposed, the Exposition would be held.



GROUP. ADMINISTRATION BUILDING

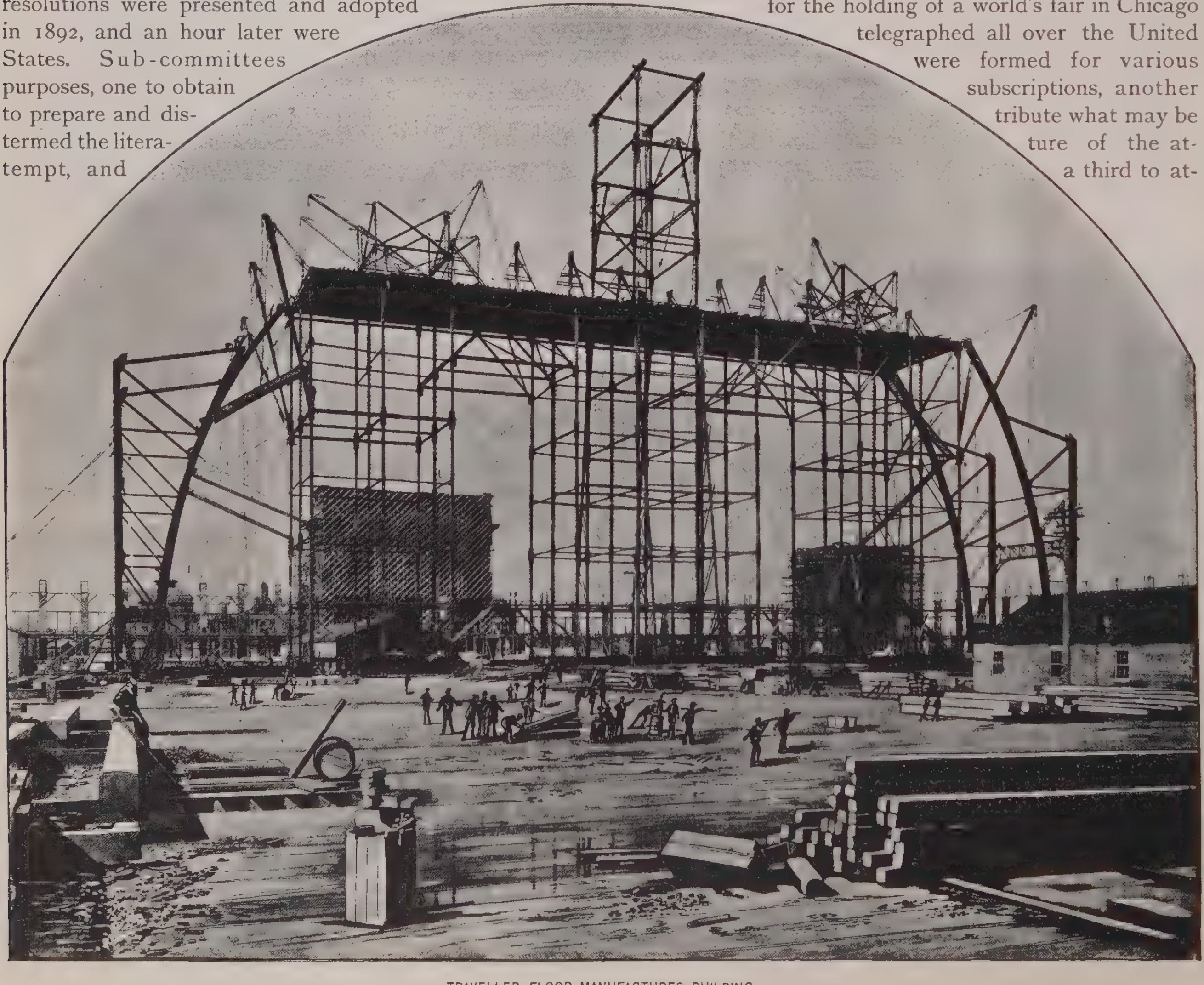
At length, after a long period of comparative inaction, the people and press of the United States were roused to the importance of the occasion, realizing that if an exposition was to be held at all, it must be on a larger and more comprehensive scale than any that had yet been attempted, one to which we would not be ashamed to invite all nations, nor have cause to fear that our own exhibits would suffer by comparison with those of foreign lands. A further stimulus to the national pride was the success of the Paris Exposition of 1889, surpassing in splendor and completeness all other industrial and artistic displays, even throwing into the shade the


RAISING DERRICK FOR DOME


TRAVELLER HOISTING ENGINE

Centennial Exposition. Moreover, it was well known, the feeble representation made at Paris of our own productions in the mechanic and liberal arts, of our progress in the industries and inventions, wherein we had claimed for ourselves a foremost rank. There should be now no hesitation or delay. We must have such an exhibition as, fostered by the entire people and by the people's government, and aided without stint by all sections of the republic, would display to the world the most perfect of our mechanical appliances, our most finished works of art, and the choicest productions of our farms and factories and mines. If this could not be done, then we would have none at all.

In the summer of 1889, with a view to give tangible shape to the project, a committee was organized under the direction of DeWitt C. Cregier, mayor of Chicago, by whom several hundred of her prominent citizens were invited to meet in the council chamber. This they did on the 1st of August in that year, on which occasion resolutions were presented and adopted for the holding of a world's fair in Chicago in 1892, and an hour later were telegraphed all over the United States. Sub-committees were formed for various purposes, one to obtain subscriptions, another to prepare and distribute what may be termed the literature of the attempt, and a third to at-

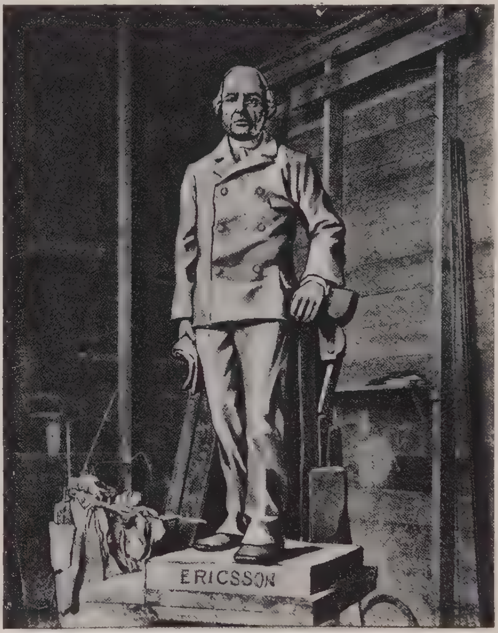

TRAVELLER, FLOOR MANUFACTURES BUILDING

MODEL, MACHINERY BUILDING. KRAUSS

tend to its interests in Washington. Meanwhile a number of states were canvassed, their citizens invited to public meetings, and with the result that many influential men were enlisted in the cause.

But for the coveted prize of location there were several competitors, New York, St Louis, and Washington striving for the distinction, and putting forth claims for consideration as the most suitable spot. For a time it was thought that the place would be New York, where the sum of $5,000,000 was raised by subscription as a guarantee fund, and a site selected adjacent to Central park. Meanwhile St Louis and Chicago, both having secured the necessary funds, had entered yet more strenuously into the controversy, the three cities making free use of their influence in the state and national legislatures. Finally it was determined that representatives from the competing points should meet in Washington, and there discuss and agree on a general plan of procedure, with the result that final action was left in the hands of congress.

A most vigorous campaign was then inaugurated, the three other cities making common cause against Washington, whose claim was based on the fact that the proposed exposition was to be held under the auspices of the national government, and hence that the national capital was the most appropriate place. For several months the competition lasted, relieved by many humorous phases, with much good natured banter, and yet not without a tincture of acrimony. By each of the claimants every advantage was urged, and by each of their rivals every defect was exaggerated. Congressional committees accorded a hearing to the several delegations, that of Chicago being represented, among others, by DeWitt C. Cregier, Thomas B. Bryan, and Edward T. Jeffery.



FRONT TRANSPORTATION BUILDING. BOYLE

By the Chicago delegates were urged her position as a railroad centre, and the commercial centre of the west, commodious sites convenient to access, and ample hotel and other accommodations, with comfortable quarters for several hundred thousand visitors, without overcrowding. While conceding that such an exhibition might be held at good advantage in other cities, it was claimed that Chicago could command an equal array of talent for architectural and engineering purposes, while here was a better and larger choice for sites than at any of the other points proposed. That the people were in favor of this selection was shown by the fact that their subscriptions already amounted to $5,000,000, contributed by 25,000 subscribers, not only in Chicago but in every section of the republic, by men and women of every class and condition of life, from the millionaire to the wage-worker on farm or in factory. It was pointed out that Chicago was abreast, or very nearly so, of our centre of population and production, that while of the nine great states grouped around her, and for which she was mainly the receiving and distributing point, the area was only 13 per cent of that of the republic, the population was 35 per cent, the railroad mileage 37 per cent, and the grain crop more than 55 per cent; that with these nine states there was no other group that would compare in all that is essential to material prosperity.

THE SLEEP OF THE FLOWERS. KRAUSS

MODEL, MINING BUILDING. BOCK

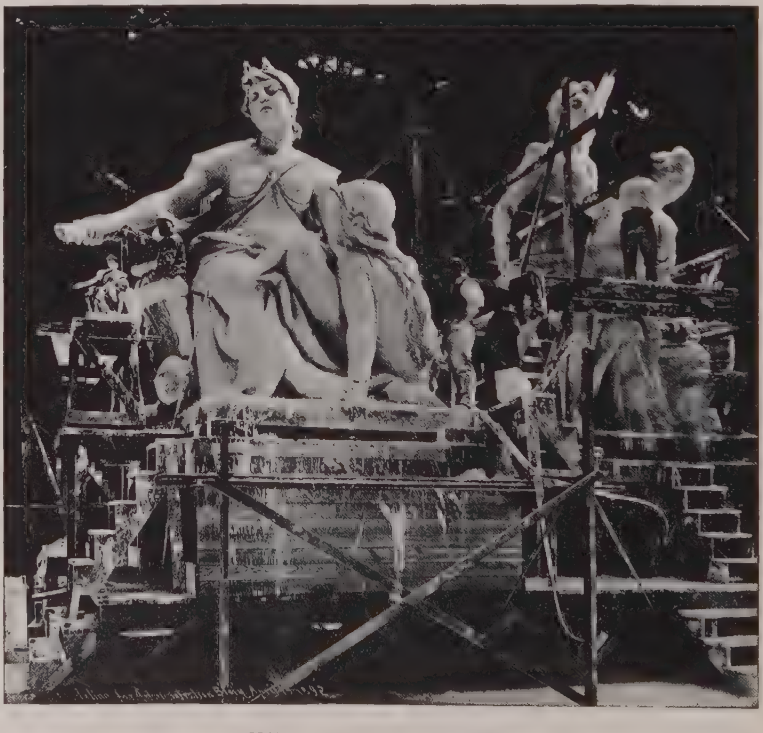
E. T. JEFFERY

By the street-car and railroad lines of Chicago there were conveyed in 1889 nearly 200,000,000 passengers, or an average of nearly 550,000 a day. With increased equipments on existing tracks, it was estimated that, including facilities for water transportation, there could be accommodated, if need be, 160,000 passengers an hour. From Chicago to the Atlantic seaboard was a distance of some 900 miles; to the gulf of Mexico and to the base of the Rocky mountains it was about an equal distance. The city was situated midway between these points, and convenient of access to them all. American visitors would probably outnumber foreign visitors by fifty to one, and the journey from New York to Chicago was no further than from Chicago to New York. As to commerce and traffic developed on Lake Michigan, there arrived and cleared at the port of Chicago in 1889 more than 22,000 vessels, with an aggregate registry of 8,900,000 tons, and this apart from several thousand canal boats. As to the means of reaching the place by water, the caravels of Columbus might sail from Spain across the Atlantic, and by river and canal find access to the great lakes.

THOMAS B. BRYAN

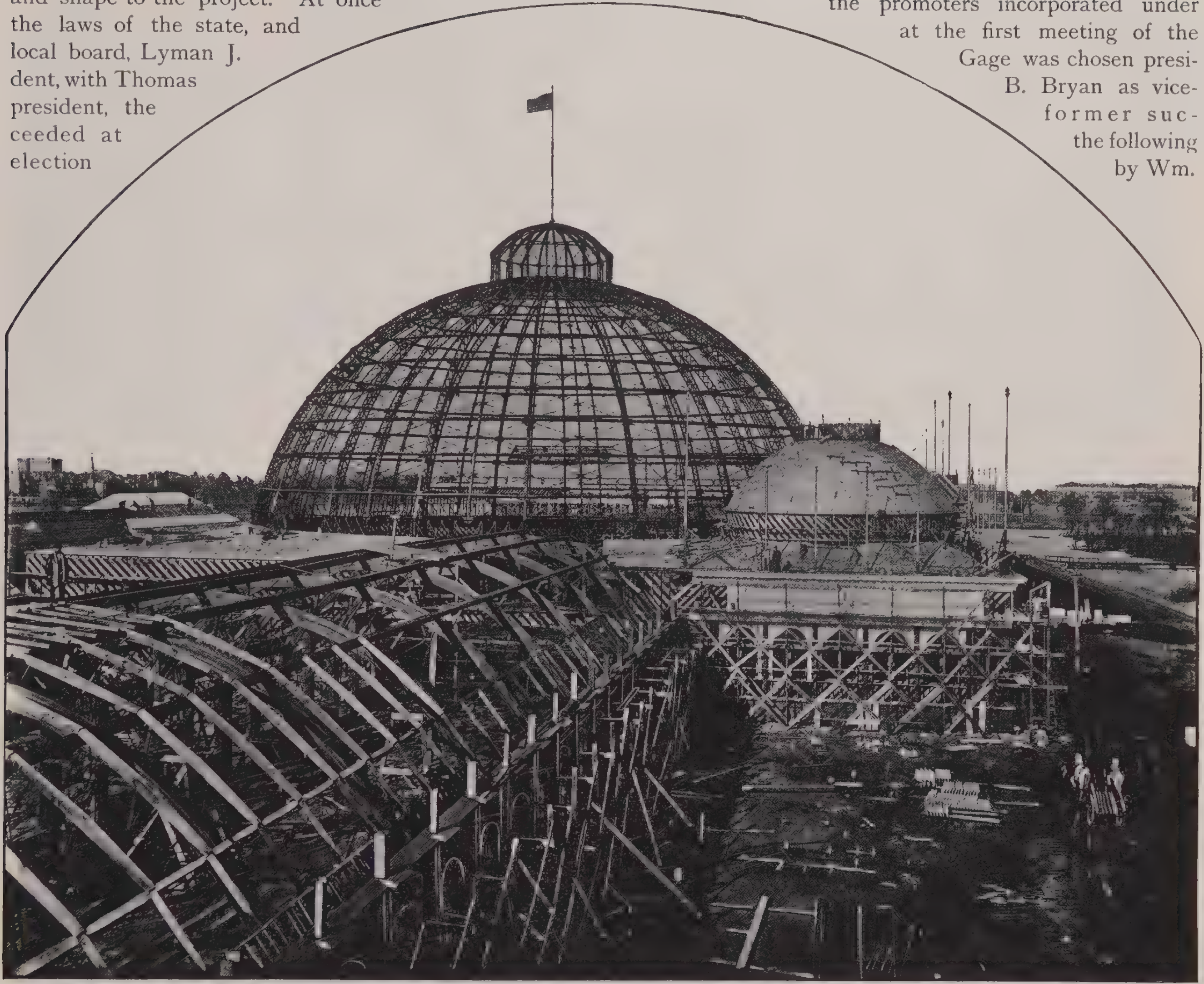
The struggle was finally decided in favor of Chicago; but after one of the closest contests ever witnessed in the halls of the national legislature. In the house of representatives a number of ballots were taken, and long the issue hung in the balance, the men of the Garden city remaining on the floor as long as the rules permitted, and then dispersing, some to telegraph offices, others to hotels, or wherever they could ascertain most readily the progress of events. Presently came news that Chicago was in the lead; but the issue fluctuated at almost every ballot, until at last only a single vote was wanting to decide the battle. Then the strain became intense, as was also the excitement in Chicago itself, whose citizens awaited the result of each successive ballot, telegraphed within two minutes after it was cast. At length came tidings of victory; the prize had fallen to the western metropolis; and with thankful hearts the delegation, nearly one hundred strong, set their faces toward home, where like a conquering host they were met by a vast procession of citizens, among them the society of the Sons of New York, with banners and placards representing every county of the empire state. Thus after a severe contest, or rather series of contests, each of the rival cities bringing to bear all the influence at its command, Chicago secured the coveted distinction, and to her thorough organization, her earnest intent, and her superior generalship was this triumph due. Nor was there the loss of a single day in giving definite form

WILLIAM T. BAKER



GROUP, ADMINISTRATION BUILDING

and shape to the project. At once the promoters incorporated under the laws of the state, and at the first meeting of the local board, Lyman J. Gage was chosen president, with Thomas B. Bryan as vice-president, the former succeeded at the following election by Wm. T. Baker, and with many changes in the directorate. In accordance with the act of incorporation stock was issued to the amount of $5,000,000, later considerably increased, and soon everything was in working order.

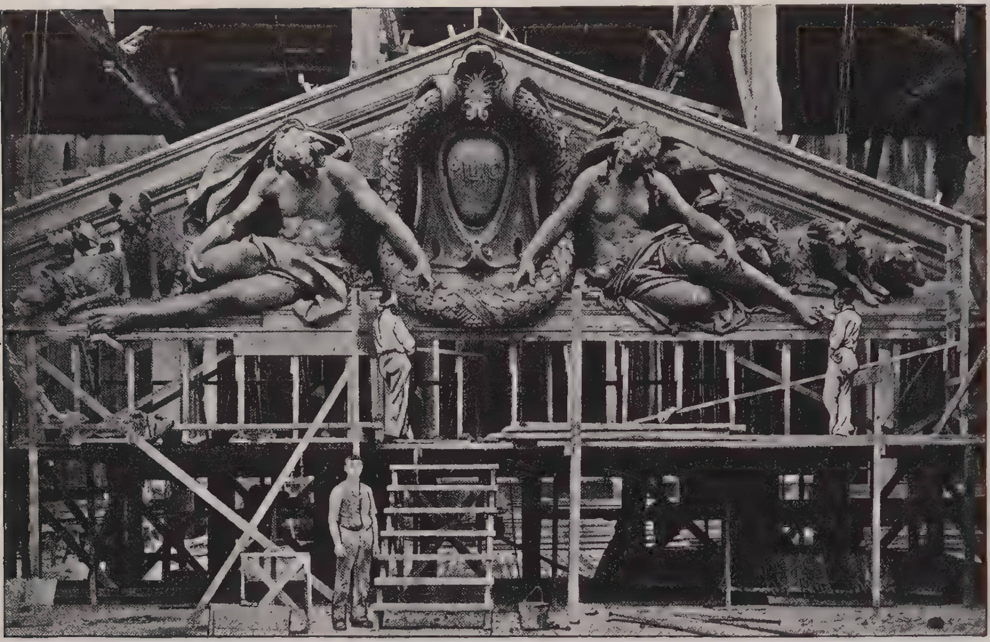

DOME, HORTICULTURAL BUILDING

In May, 1890, the City council was urged in a message from its mayor to issue $5,000,000 in bonds as the citizens' contribution to the enterprise. This was cheerfully granted, and since under the existing law the council had exceeded the limit of its financial powers, a statute was passed by the legislature conferring the needed authority, the question being first submitted to the people as involving a change of constitution. A vigorous effort was then made to secure from the legislature a liberal appropriation, and this was also successful, though not without strenuous opposition, Illinois contributing the sum of $800,000, the largest of all the state donations.

Meanwhile, on the 25th of April, 1890, an act received the president's signature securing to Chicago the World's Columbian Exposition of "arts, industries, manufactures, and the products of the soil, mine, and sea." Though somewhat stringent in its conditions, the terms of the act were

LYMAN J. GAGE

FIGURE FOR GROUP ON AGRICULTURAL BUILDING


PEDIMENT, AGRICULTURAL BUILDING

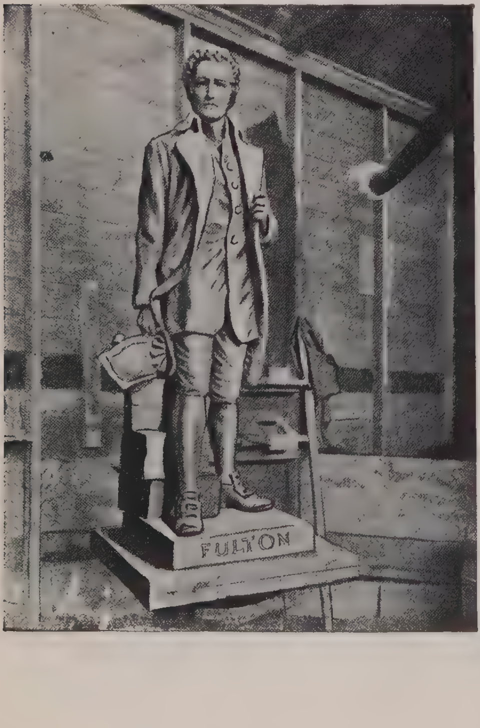
accepted, not, however, without forebodings of evil from undue interference on the part of the National Commission.

By the provisions of the act this Commission was to consist of eight commissioners at large and two members from every state and territory in the republic, and was empowered to accept at its discretion such site as might be offered, together with plans and specifications of buildings, if deemed adequate for the purposes required, and provided satisfactory proof were furnished that subscriptions to the amount of $10,000,000 would be forthcoming in time for the prosecution and completion of the work. By the Commission, space was to be allotted to exhibitors, a classification of exhibits prepared, the plan and scope of the Exposition determined, judges and examiners appointed, premiums awarded, and all intercourse conducted with the exhibitors and representatives of foreign nations. Even the regulations of the local board of directors as to the rates for entrance and admission fees, and the rights and privileges of exhibitors and of the public, were subject to modification by a majority of the commissioners.

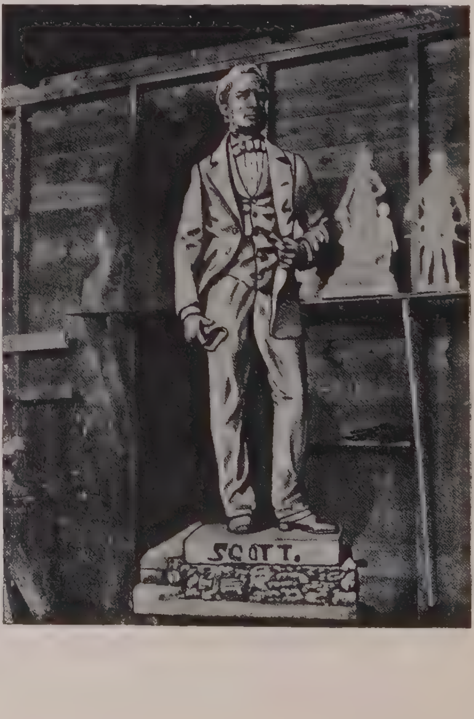
A Board of Lady Managers was to be appointed, to perform such duties as might be prescribed by the Commission, and with power to appoint one or more members of all such committees as were authorized to award prizes for exhibits produced entirely or in part by female labor.

The dedication services were to be held, with appropriate ceremonies, on the 12th, afterward postponed to the 21st of October, 1892; the Fair to be opened on the 1st of May, 1893, and closed not later than the 30th of October following.

As soon as the sum of $10,000,000 should be raised or subscribed by responsible parties, and provision made for suitable grounds and buildings, the president was authorized to make proclamation of the same, to forward copies of his proclamation to the diplomatic representatives of foreign powers, and to invite foreign nations to participate in the Exposition.

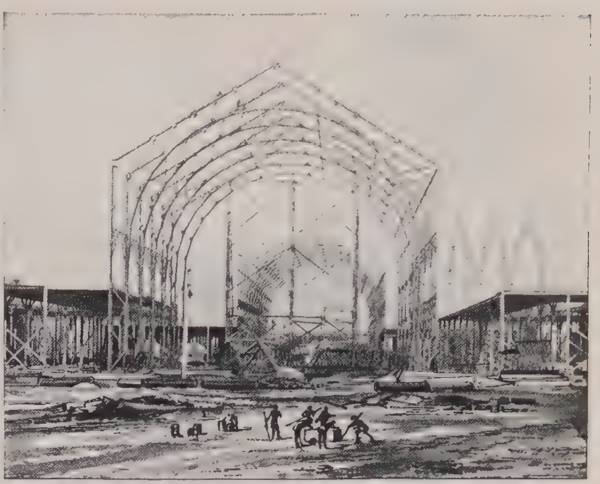


A government exhibit was to be furnished, such as would illustrate its functions in time of peace and its resources in time of war, one tending to explain the nature of American institutions and their adaptation to the wants of the people. For this purpose a building was to be erected at a cost not exceeding $400,000, and a board appointed to arrange and take charge of the exhibit. For the erection and maintenance of such building, the cost of transportation, the care, custody, and safe return of articles belonging to its

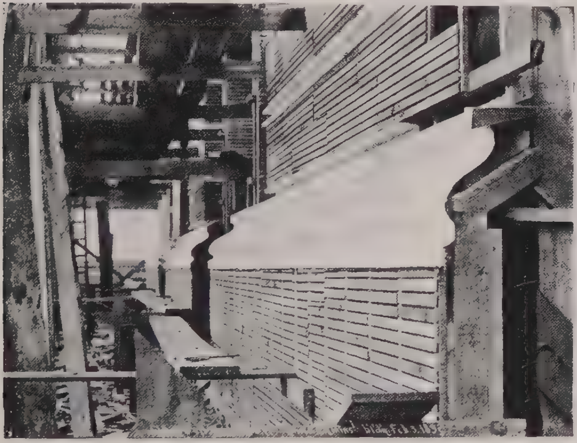


exhibits, and other incidental expenses, the United States should become liable for a sum not exceeding in the aggregate $1,500,000.

On the 24th of December, 1890, all the conditions of the act having thus far been complied with, the president issued his proclamation, giving to the enterprise official recognition, and in the name of the government and the people of the United States, invited all the nations of the earth to take part in the commemoration of an event that would be prominent in human history and of lasting interest to mankind, by appointing representatives thereto, and sending such exhibits to the World's Columbian Exposition as should most fitly and fully illustrate their resources, their industries, and their progress in civilization. Thus was removed all possibility of doubt or failure; and in the nature of a Christmas gift came the president's missive to Chicago.

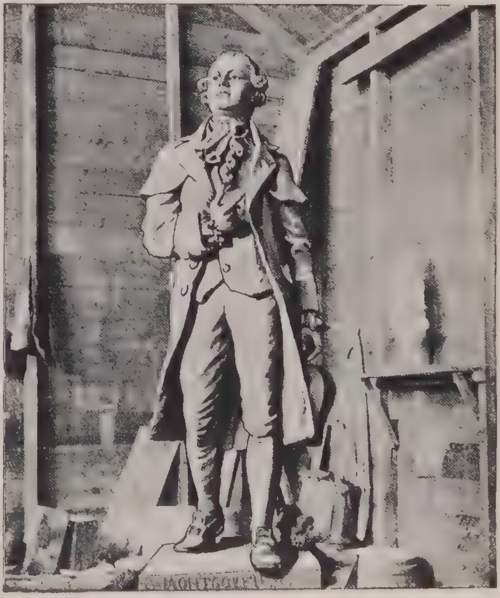

FRAME ELECTRICITY BUILDING

The world was not slow to avail itself of the invitation, and within little more than a twelvemonth no less than forty-four nations, with twenty-eight colonies and provinces, had signified their acceptance, their appropriations aggregating at the close of 1892 over $6,000,000. The amounts set apart for exhibits were by no means in proportion to their resources, Japan for instance contributing $630,000 and Brazil $600,000, while Great Britain was represented by a smaller contribution, exceeding only by a few thousand dollars that of her single colony of New South Wales. Meanwhile the states had been somewhat backward, the names of several being omitted from the list as late as September, 1892, though appearing later, either with public or private contributions, some being prohibited by constitutional restrictions from making actual appropriations. By Illinois $800,000 was subscribed; by California, $300,000; by New York and Pennsylvania, each $300,000; by Massachusetts, Kentucky, Ohio, Michigan, Iowa, and Washington, amounts varying from $100,000 to $175,000; all the rest falling below $100,000, and several donating such insignificant sums as $25,000, $15,000 and even $10,000. The last of these donations were somewhat in contrast with those of the minor foreign powers, and even of the British colonies, one of which contributed individually nearly as much as the total accredited to all the New England states. By the principal foreign nations, and by nearly all the states, special buildings were erected as headquarters and for the accommodation of certain exhibits, the original appropriations of many of the participants being afterward largely increased.


APPLICATION OF STAFF

To the department of Publicity and Promotion, the first one organized, and whose task, begun in 1890, assumed gigantic proportions, is largely due the popularity of the Chicago Fair, and the appropriation, by home and foreign participants, of a larger amount than was ever contributed for any previous exposition. Through the efforts of its able manager, Moses P. Handy, and of his corps of trained and energetic assistants, a favorable impression was created throughout the civilized world as to the utility and attractions of the coming display. Calling to his aid that most powerful of all human agencies, the public press, not only in the United States but in foreign lands, he explained the character, scope, and plan of the Exposition, and why the time and place were especially appropriate for a great

MOSES P. HANDY



H. N. HIGINBOTHAM

international display. These articles were translated into all the principal European languages, and in response more than 2,000 newspapers and magazines not only forwarded copies regularly to the department, but devoted a liberal space in their columns to items and illustrations of the undertaking. Every week some 23,000 letters, circulars, and pamphlets were mailed to the various states and territories, with 14,000 to at least eighty foreign nations and colonies. Newspaper clippings were also made and distributed at the rate of many millions of words a day. By March, 1893, the volume of correspondence and communication had assumed enormous proportions, the mail matter of from 50,000 to 60,000 pieces including more than 20,000 journals. In addition to the articles prepared for countless publications, electrotype impressions of the buildings and officials were scattered broadcast by the ton, together with information to intending visitors, such as would enable them to make their trip one of pleasure, comfort, and instruction. On this department also devolved the duty of preparing the official guides and catalogues, together with the collection of material for a government history of the Exposition, the latter a task of encyclopedic proportions.

It was not without many difficulties that matters were pushed forward to the point where ground could be broken, and the actual work begun of preparing for the great event. Foremost of all came the question of site, for which there were several competing locations, the supporters of each urging their claims with such persistence that for months the local board was overwhelmed with propositions. The first considered was the portion of the lake front between Madison street and Park row; but to prepare it for the required purposes would involve serious expense and delay. Moreover, should the Fair be held at that point, much inconvenience would be caused by the overcrowding of streets. Next was proposed Jackson park; but this also would entail a heavy outlay for filling, and for the formation of lagoons. The northern part was already occupied as a public pleasure ground, and the remaining part was considered somewhat too remote from the business portion of the city. The third of the proffered sites was a section of Garfield park, with lands adjacent, much nearer to the business quarter; a fourth was a choice location of six hundred acres fronting on the lake, in the northern part of Lake View; a fifth was Washington park, a cultivated tract not far distant from the water front. All these were rejected, and for reasons that will elsewhere be stated, the choice fell on Jackson park, for the use of the unimproved portion of which an ordinance was passed by the park commissioners, with the sanction of the state legislature.

THEOLOGY. CARL BITTER. ADMINISTRATION BUILDING

No sooner was the site determined than the National Commission made its appearance, demanding certain changes and modifications to which the local directory was compelled to agree. Then came a dispute as to jurisdiction, the directors insisting on the control, so far at least as home exhibits were concerned, since through their efforts nearly all the funds had been secured, while the Commission claimed supremacy in accordance with the provisions of the congressional act, and also on the ground that recognition would not otherwise be accorded by foreign powers.

Had not the question threatened serious consequences, it would merely have been regarded as a ludicrous episode in the history of the Fair. The controversy originated in a disputed interpretation of the section in the act which provides that "the Commission shall generally have charge of all intercourse with the exhibitors and the representatives of foreign nations." By those who wished to curtail the powers of the Commission it was claimed that this clause restricted their authority to foreign exhibitors, leaving the local board in charge of all matters pertaining to domestic exhibits. If, it was urged, congress had intended to confer on the national body complete juris-

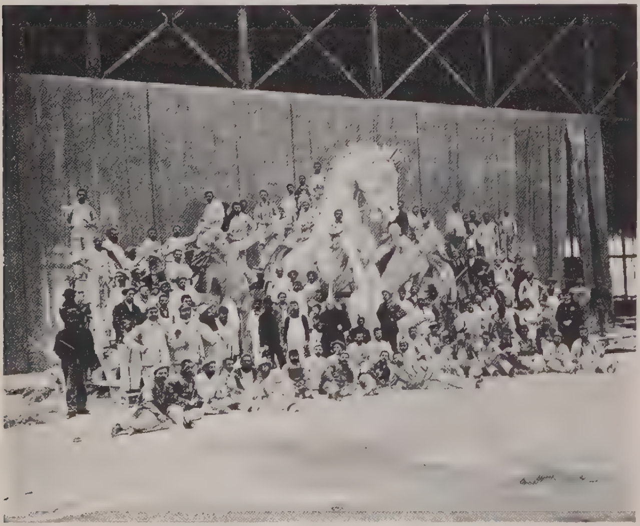
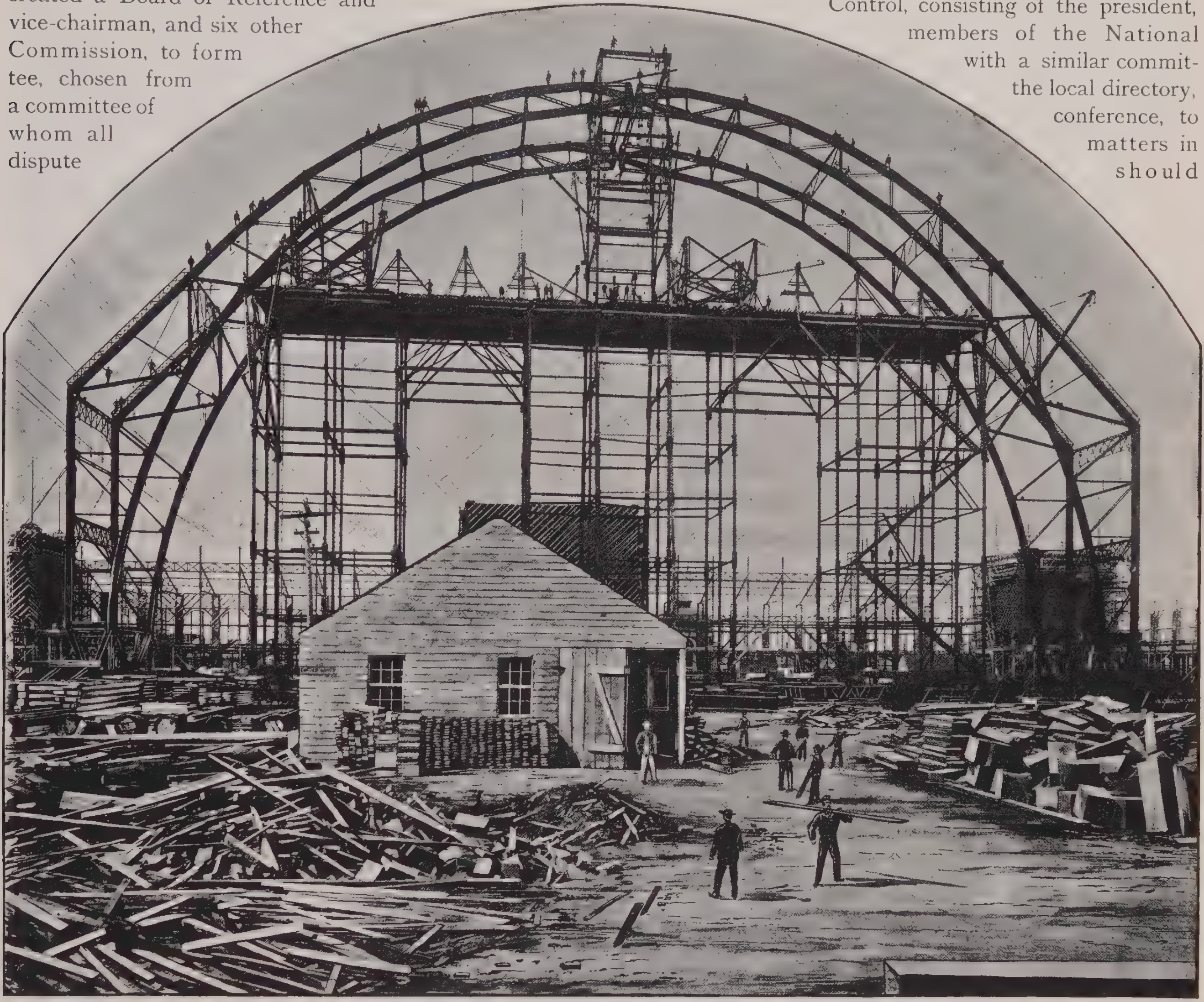


FIGURE FOR GROUP, AGRICULTURAL BUILDING

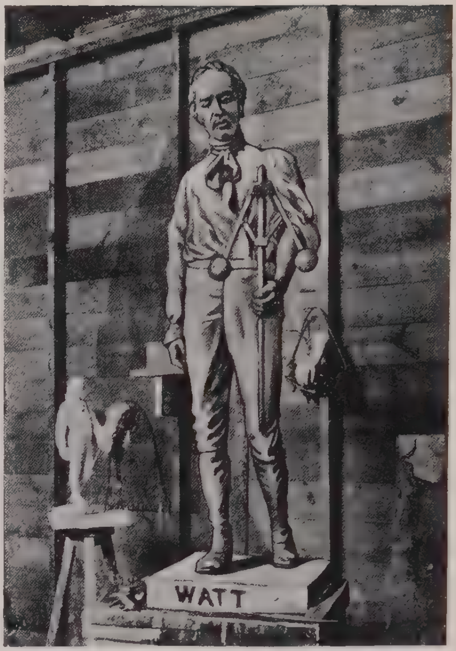
diction, then a comma would have been placed after the word "exhibitors," the remainder of the sentence being in the nature of an addendum, extending its control to foreign representatives. With such persistence was the contest waged as to threaten the vital interests of the Fair, and thus for a time did the fate of the World's Columbian Exposition depend upon a punctuation mark.

Finally matters were adjusted by joint committees selected from the two parties, at whose suggestion was created a Board of Reference and Control, consisting of the president, vice-chairman, and six other members of the National Commission, to form with a similar committee, chosen from the local directory, a committee of conference, to whom all matters in dispute should be referred, and from whose decision there should be no appeal. Thus harmony was for a time restored, soon, however, to be disturbed by a special congressional committee, appointed to investigate the management of the Exposition, and to submit a plan for future administration. Its report presented to the house in January, 1891, was adverse to the National Commission, declaring that many of the functions and powers assumed were outside the purposes of the act, recommending its virtual abolition, and stating that the control of affairs should rest with the local directory, by whose members the funds had been raised. But apart from the friction and antagonism which it aroused, together with the strictures of press and public, no harm was wrought by this report, and on its recommendations no further action was taken by congress.



FIRST ARCHES MANUFACTURES BUILDING

When the National Commission was organized, the executive committee, consisting of thirty members, was found to be too unwieldy an organization for prompt and decisive action. Here was an additional reason for transferring its power to the Board of Reference and Control. Even the latter was found too cumbersome for practical purposes, with sessions held at long intervals, and other embarrassing difficulties arising from the want of a vigorous executive force, such as would solve without delay the ever-recurring problems calling for instant action. Hence it was determined to organize the management anew, in the shape of a smaller body that should hold continuous sessions, and whose jurisdiction should be absolute in all matters pertaining to the general administration of the Fair. Such action was indeed rendered necessary through the conflicting interests and prerogatives of the several parties in control, and through the near approach of the opening day, with a vast accumulation of business still remaining on hand.

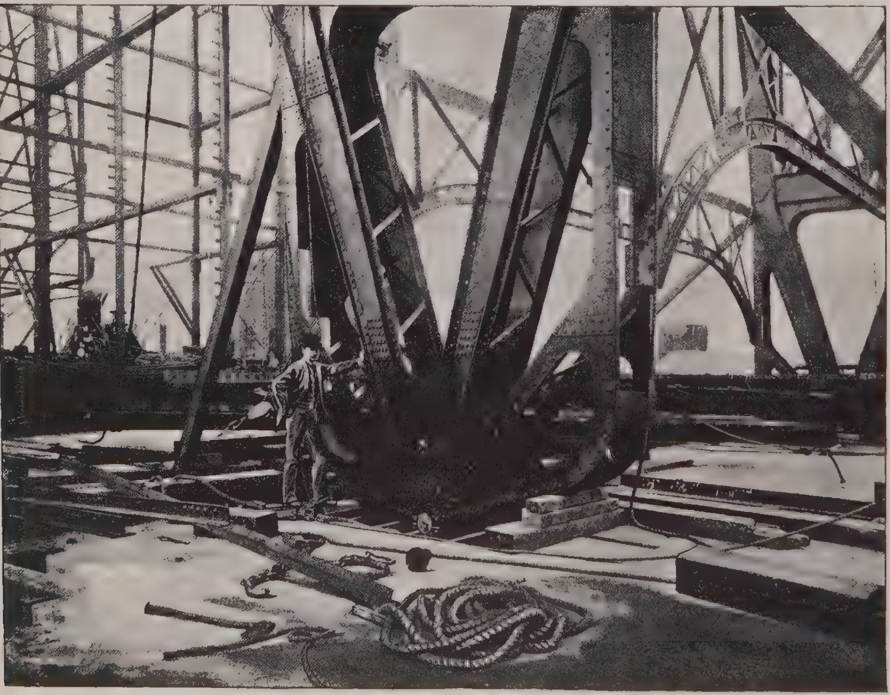


The new organization, styled the Council of Administration, consisted of four members, selected from both branches of the management, H. N. Higinbotham and Charles H. Schwab representing the directory, and George V. Massey and J. W. St Clair the National Commission. On Mr Higinbotham, president of the local board, was also conferred the presidency of the council. While created nominally with absolute control, its proceedings were in a measure subject to the approval of the Board of Control. It was also assisted by the committees of finance and of ways and means, the former attending to such matters as its name implied, and the latter to affairs relating to privileges and concessions[1] from which revenues could be derived. One effect of this measure was to abolish most of the committees of the directory; another was a saving of expense; and the third that the affairs of the Exposition were for the first time conducted with harmony, simplicity, and dispatch.

While the director-general was empowered to treat with all exhibitors, there was also created for this purpose a department of Foreign Affairs, with authority to open direct communication between the Exposition authorities and the representatives of foreign nations. The chiefs of other departments, by whom were granted allotments of space to American exhibitors, were likewise empowered to correspond directly with foreign commissioners, should their applications be referred to them by the director-general of the department of Foreign Affairs. Individual exhibitors would, after the opening of the Fair, receive their instructions from the chief in whose department their exhibits were made, and through him from the director-general.

But as to the management of the Fair, a more detailed description will be given in another section of this work. Let us return for a moment to the proceedings of congress as to Exposition affairs, for in the welfare of that enterprise the national legislature manifested a fatherly interest, though as to the matter of appropriations appearing somewhat in the role of step-father. In February, 1892, a resolution was adopted by the house that, whereas further appropriations were asked, in addition to those already made, the "committee on appropriations is hereby ordered to inquire and report to the house whether those obligated and undertaking and now engaged to do so, have justly and properly complied with the requirements of the act of congress approved April 25, 1890, and whether all expenditures of whatever character for said Exposition have been judiciously made."

Whatever may have been their errors of administration, certain it is that "those obligated" did not fail to render a complete and itemized statement of all expenditures, from the outlay of millions on grounds and buildings to the wages of a temporary janitor, the cost of a door mat, and the price of a dozen cuspidores. By William T. Baker, president of the Board of Directors, it was stated that the total receipts from all sources, to the 1st of March, 1892, were $5,106,181, with resources available from the balance of stock subscriptions and of the appropriations of the city of Chicago amounting to $5,713,051. The entire expenditure to that date was $3,860,935, and the indebtedness or liabilities under the various contracts, $4,692,724. Nothing had been received in the way of loans or donations from private individuals; nor was there any incumbrance, direct or implied, on the property or receipts of the Exposition, which was free from debt, except for the amounts due to contractors as the work progressed. By the chief of construction it was estimated that, apart from outstanding contracts, $7,726,760 would be required for



FOOT OF ARCH MANUFACTURES BUILDING

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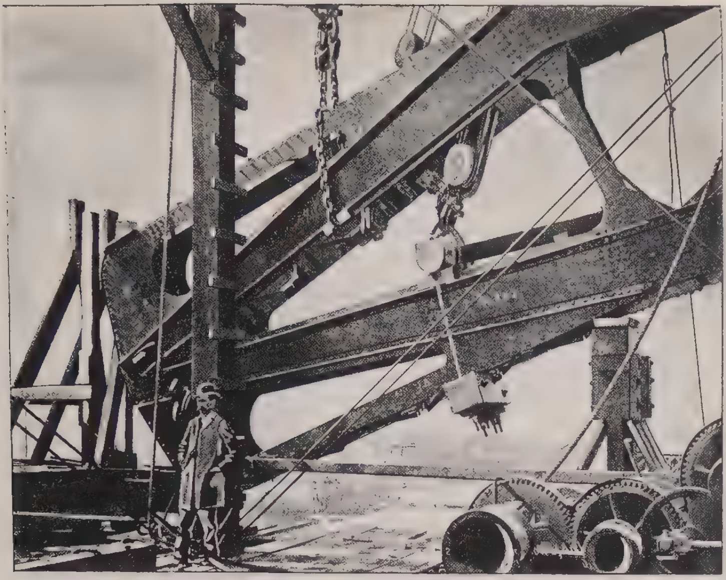
[1] The term privileges relates to the sale of goods manufactured for the purpose of illustrating the process exhibited. Concessions refer to the disposal of goods and to special attractions from which the sole object is to secure a profit.



UPPER SECTION OF ARCH

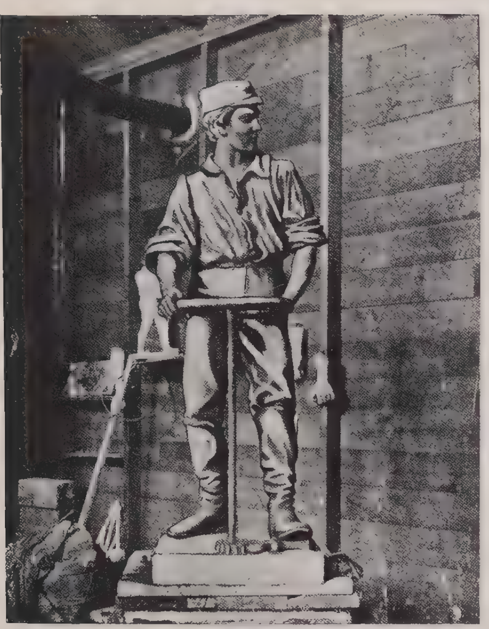
the completion of the work on buildings and grounds, and for the maintenance of departments and operating expenses until the opening of the Fair about $700,000, making a total outlay, including the expenses and liabilities already incurred, of nearly $17,000,000. As will presently appear, these estimates fell somewhat short of the actual expenditure; but with the single exception of the Paris Exposition of 1889, this was the case with all the great world's fairs.

In its report, dated the 20th of May, 1892, the committee made only a few suggestions as to superior management and economy. The chosen site it stated, was ample in extent, embracing more than double the area occupied by the Centennial Exposition. The landscape effects would be singularly beautiful; the blending of art with nature in excellent taste and perfect harmony, the interlacing of land and water forming a novel and attractive feature. The architectural display would present a striking and imposing aspect, while the spacious verdure-clad grounds, dotted with shrubbery and with forest growth, would complete the elements of a matchless panorama. The facilities for travel and transportation, both by land and water, would be equal to any demand that could be made upon them, and in a word, both as to design and execution, the Fair would be a worthy tribute to the ingenuity and enterprise of the wonderful city of the west. "In its scope and magnificence," the report concluded, "this Exposition stands alone. There is nothing like it in all history. It easily surpasses all kindred enterprises, and will amply illustrate the marvellous genius of the American people in the great domains of agriculture, commerce, manufactures, and invention, which constitute the foundation upon which rests the structure of our national glory and prosperity."

As the result of the investigation, instead of a loan of $5,000,000 applied for by the management, congress voted half that sum as a gift, in the form of 5,000,000 souvenir coins with commemorative inscriptions, the remaining half to be realized, as was anticipated, from premiums on their sale. Even that amount was contributed with reluctance, after much discussion, and only it would seem, as an inducement to close the Fair on Sunday. To this condition, obnoxious as it was to a large portion of the community, injurious to the financial interests of the Exposition, and especially distasteful to the millions residing in Chicago and its neighborhood, who could attend the Fair on no other day, a strong opposition was made, but it was not until long afterward that the matter was determined in court. The parsimony of the national legislature in its contributions to the Chicago Fair, and also to the Centennial Fair, for which a loan of $1,500,000 was the only appropriation, is somewhat in contrast with the policy of foreign governments, by nearly all of which their exhibitions of industry, science, and art have been liberally supported, and many of them entirely supported with the people's funds.

Six or seven miles from the business quarter of Chicago, on the southern verge of its park system, there lay a sandy waste of unredeemed and desert land, in its centre a marshy hollow, and without trace of vegetation, save for a stunted growth of oak, and here and there a tangled mass of willow, flag, and marsh grass, which served but to render its desolation still more desolate. On one side was the road-bed of a suburban railway, on another

SITE OF EXPOSITION



FOR TRANSPORTATION BUILDING

JACKSON PARK BEACH

a wall of solid masonry withstood the encroachments of an inland sea, and over the tract lay the bareness of a city's outskirts.

On the sand-hillocks of this plain, a few mule-teams and shovelmen were set at work grading in the spring of 1891; and thus was inaugurated the stupendous task of the World's Columbian Exposition. Here was the chosen site for the grandest achievement of artistic skill and mechanical ingenuity, the site of a group of buildings gigantic in plan and structure, a city of palaces arising from a network of gardens and pleasure grounds, all on a scale such as had never before been devised for such a purpose, such as few believed it possible to complete within so brief a period.

As to the speed with which the work was accomplished, a comparison may here be made with the Paris Exposition of 1889, up to that date the largest, most successful, and most rapidly constructed of any of the great world's fairs. From the time of President Grevy's proclamation about four and a half years, and from the day when ground was broken, nearly three years elapsed before that display was ready for the public. The time of President Harrison's proclamation was less than two and a half years, and the commencement of actual work less than two years before the formal opening of the Columbian Fair. In Paris, fourteen months were required for the erection of the Machinery hall, and nineteen for the Palace of Liberal Arts. In Chicago both these buildings could have been duplicated in less than half the time In Paris the principal buildings covered a floor area of 75 acres, in Chicago more than 200 acres, while those of the latter far surpassed the Parisian structures in dimensions. Further comment is unnecessary; there are few who will care to dispute that the Garden city surpassed all others in rapidity of execution, as in immensity of design.

Before even the foundations could be laid of any of the Exposition buildings proper, a vast amount of expensive preliminary work was necessary, on account of the nature of the site and its distance from sources of supply. The marsh lands must be drained by the construction of artificial water-ways connecting with the lake, and utilized in adding to the landscape effect of the grounds adjacent. On this and on landscape gardening, with fountains and statuary, at least $750,000 were expended. For grading and filling purposes, 1,200,000 cubic yards of earth must be handled at a cost of nearly $500,000. For a railroad track and rolling stock for the transportation of materials, another $500,000 was required; for viaducts, bridges, and piers, $200,000; for improvements on the lake front, $200,000; for water supply, and water, sewerage, and gas pipes, $600,000. Then there were buildings for construction purposes, with stores and boarding-houses for the accommodation of thousands of workmen; there were fire and police stations; there were quarters and offices for a corps of officials, with hundreds of minor details, all to be provided for before the real work of construction was begun.

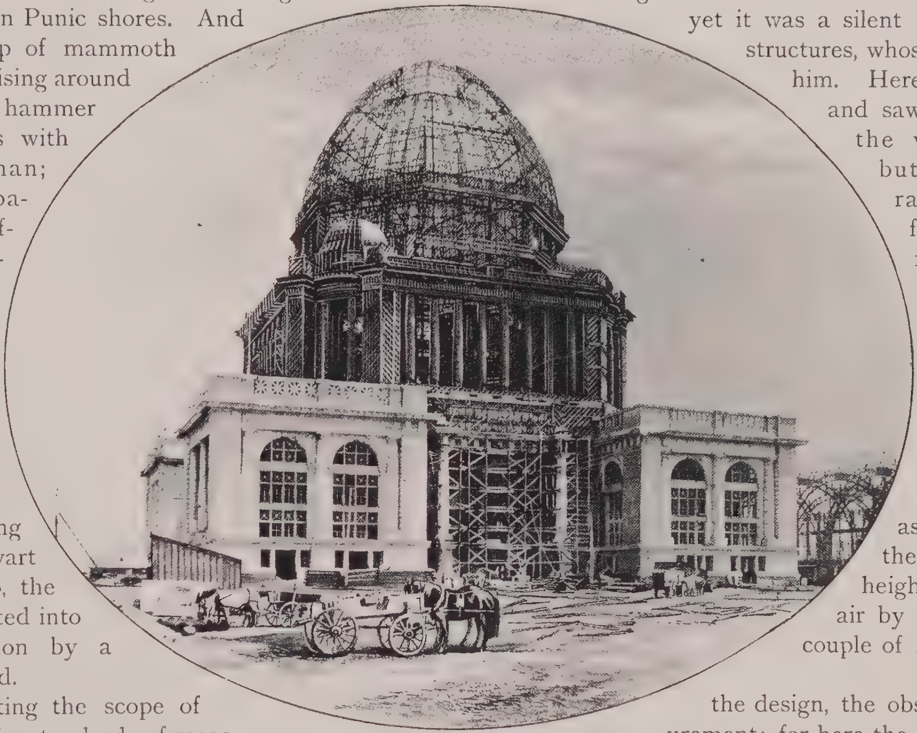
It was not until the summer of 1891 that these preliminaries were accomplished, and the foundation laid of the Woman's building, the first to be taken in hand. Then was collected on the grounds an army of laborers, mechanics, architects, designers, artists, surveyors, and engineers, while elsewhere at widely distant points artificers by scores of thousands, representing every trade and handi-

BREAKING GROUND

craft, were toiling together for a common end. During this summer, from 5,000 to 6,000 men were at work on the buildings and site; in the following summer from 7,000 to 8,000, and in September, 1892, when the principal structures were almost completed, there were nearly 3,000 employés in the service of the Exposition company, and 8,000 in the employ of contractors, the total of the pay-rolls exceeding $600,000 a month.

There is perhaps no more impressive feature in the Columbian Exposition than the task of its accomplishment; and in the concentration of enterprise, skill, and intelligence whereby such an achievement was rendered possible, we have in itself an exhibition such as has never before been witnessed. The chief of construction was a man of rare executive ability, of strong personal magnetism, and one capable of inspiring in others a portion of his own enthusiasm. Through his efforts was gathered together a corps of able artificers and architects who, while acting in concert and coördination under his direction, were permitted to realize their own individual plans in all the fullness of their ambition. Some interrupted a lucrative practice to devote themselves to the work, living at their quarters within the walls of a great inclosure without relaxation or amusement, toiling from dawn till dusk, and often far into the night, heedless of self, and intent only on doing to the best of their ability whatsoever it was given them to do.

While the buildings were in process of construction one could almost realize the colossal proportions of this enterprise. Entering the grounds in the spring of 1892, the visitor beheld such a scene of bustling activity as that which at the founding of Carthage greeted the father of the Roman race when first he set foot on Punic shores. And yet it was a silent activity that pervaded this group of mammoth structures, whose pillars and walls and domes were rising around him. Here was an army of mechanics, with hammer and saw and mallet, all plying their tools with the vigor of a true American workman; but amid the wide spaces that separated these huge architectural efforts the noise was barely perceptible. Then there was an air of unreality about this congregation of edifices, so strange in dimensions and design, rising as from the touch of a fairy's wand at the bidding of some potent agency. On one hand might be seen the two sections of an immense iron arch meeting as silently as shadows flitting athwart the sky; on another a pillar of stucco, the height of a two-story house, being hoisted into air by a wire rope, and placed in position by a couple of men two hundred feet above ground.


ADMINISTRATION BUILDING

In estimating the scope of the design, the observer would find himself at a loss for standards of measurement; for here the scale was so vast that there was nothing on which to base a comparison. In the Manufactures and Liberal Arts building, for instance, he would see the largest arched roof in the world, supported without columns, and covering an area of 540,000 square feet. Beneath this monster arch a quarter of million people might be seated, and yet probably not one among them could think of anything that suggested to his mind an adequate idea of its dimensions. He might be told that in the roof over his head were 1,000 tons of iron and several hundred tons of glass; that the truss alone, with its purlines, weighed 200 tons; but this would neither add to his comfort, nor aid him in the mental process of admeasurement. To compare it with other buildings, either in Europe or America was impossible, for there were none in existence; and to compare it with those on the grounds would be equally impossible, for adjacent structures, covering several acres of floor space, were dwarfed and dominated by this mammoth edifice.

Yet there are those who will say, that if for the housing of the world's exhibits such feats have been accomplished as were never before attempted or deemed worthy of attempting, it does not necessarily follow that a corresponding work has therefore been achieved in architectural design or artistic embellishment. Not least among the lessons of this magnificent display are the lessons it teaches in revealing to us our shortcomings. The work our people have done will be criticised by some of the most experienced savants and connoisseurs from every quarter, by those who will be sparing neither in praise nor censure. I shall not attempt to forecast their judgment, for all in good time we shall hear the verdict of mankind as to the manner in which the second of our great metropolitan cities has performed the stupendous task imposed on the nation's fealty to art and catholicity of taste.

When Chicago was finally selected as the location of the Fair, there was general and by no means groundless apprehension that her conceptions would tend to hugeness rather than to harmony. For the most part the plans were drawn and the buildings constructed by local architects, and accustomed as they were to buildings ten or twenty stories in height, and in some instances to avenues from 200 to 300 feet wide, it is no wonder that their projects partook somewhat of the Brobdingnagian type. Said a prominent Chicago journal on the eve of dedication day, "The office architecture of Chicago is the key to the wonders of the Fair." Her office architecture is indeed remarkable, as are also her cloud-capped temples of commerce industry and art. Her citizens are proud of them, and with a not unworthy pride, for such things are well enough in their way. But as the greatness of a city cannot be judged by height of buildings and breadth of boulevards, so in relation to the Fair, we should not attempt to measure architectural accomplishment by the rood or artistic exhibits by the yard.

I would not say that such has been the case in the great work accomplished by the artificers of the Fair, by whom so many difficulties have been overcome in structural methods and contrivances. Allowing for certain drawbacks the general results are excellent, so much so as to dispel even the prejudice of eastern connoisseurs, who have long since ceased to ask whether, in the line of art or architecture, any good thing could come from Chicago. If any of our foreign friends should wish for something different from this group of huge white buildings, with their endless array of stucco pillars, stucco ornaments, and stucco statuary, they must remember the conditions under which the task was undertaken; and considering those conditions there are few who will care to criticise too sharply the architectural features of this display. First of all it was necessary that the buildings should be of vast dimensions, for even with 200 acres or more of floor room, every foot of exhibiting space was bespoken long before the opening of the Exposition, and with applications for thrice the available room. Then they must be erected in a limited time, a time almost too limited for the thorough elaboration of artistic design. They were also temporary structures, and must be so erected that if not converted to other purposes their materials could be easily removed.

All these conditions were accepted by the architects of the Fair, and except for the coördination of their plans with the general design which had been formulated by the chief of construction and approved by the local directory, they were permitted to go about their work without interference or restriction. Thus each one attempted to give to his edifice all the exterior decoration, the symmetry and harmony of detail that pertained to the exercise of his art, leaving to exhibitors and to committees appointed for that purpose the task of interior decoration.

Of all the principal buildings erected for this Exposition, and also of those erected by individual states and by foreign participants, descriptions will be given in other sections of this work. In conclusion it may be said that whatever may be the popular verdict as to the artistic merits of the Columbian Exposition, there can be no difference of opinion as to the energy which Chicago has brought to bear on this the greatest of all her great achievements, and the earnestness, intelligence, and thoroughness with which it has been accomplished. Only through the exercise of these qualities, so common to American communities, and to none more so than to the denizens of our mid-continent metropolis, has been transformed a wilderness into a garden of palaces, filled with the choicest productions of industry and art of which mankind is capable.

WORLD'S FAIR MISCELLANY.—Some items of interest relative to, yet not strictly a part of the history or description of the Exposition, I shall give at the conclusion of the various sections of this work under the heading of World's Fair Miscellany.

Not least among the Columbian exhibits is the exhibition of human nature, and had room or hearing been granted to all the crotchets, whims, and hallucinations that here found opportunity for display, we should in truth have had such a variety fair as has never yet appeared. By one of the applicants for space it was proposed to erect a tower 3,000 feet in height; by another a building with 400 stories; by a third to excavate a suite of apartments beneath the waters of Lake Michigan; by a fourth to hold bull-fights; by a fifth to establish a cock-pit. From England came one who sought to be placed on exhibition as the Messiah; from New England one to whom it was revealed that the site of the Fair was foreordained from the beginning of time. By a western man space was asked in which to illustrate to mankind the principles of perpetual motion; and by a mathematician to show how to square the circle. From a couple of New York vagrants came an offer to journey on foot to the Exposition grounds, and camping thereon, to exemplify and lecture on their mode of life. By the father of an infant prodigy the services of the latter were tendered to introduce at the dedication ceremonies the leading orator of the occasion. But the most remarkable application of all came from a vendor of cosmetics, who proposed to exhibit a wrinkled hag with one-half of her features made sleek and smooth by his treatment, and at the close of the Fair to varnish the remaining half in the presence of the assembled multitude.

Several of the subscriptions for exposition stock were from $50,000 to $100,000, and several hundreds from $10,000 to $25,000. The people of Chicago subscribed as they had never subscribed before, nearly all good and substantial citizens contributing according to their means, so that never perhaps in the history of the world was so large a subscription made so readily and promptly. The payment was guaranteed by Lyman J. Gage, who thus showed his faith in the responsibility of the subscribers. Under the charge of D. H. Lamberson, as superintendent of this department, were more than 200 committees, the members of which invited representatives of the various lines of trade to meet them in hotel parlors, where the financial problem was presented in a business-like shape, and discussed in all its phases. Then a thorough canvass was made of the city, outside of which very little aid was obtained.

That Chicago secured the location of the Fair was largely due to the fact that her citizens were thoroughly in earnest, that while the people of other cities were merely talking and too often bickering about it, those of the Lake city were acting. Long before New York had procured among her people one-third of the necessary amount, they had their money in hand, or guaranteed, as I have said; and, declared their senators in the senate chamber, "If necessary we will double it, and thus insure an Exposition of which the nation need not be ashamed."

In congress Chicago was supported by most of the western and northwestern states, and with many friends in the southern states. Excellent service was rendered by George R. Davis, the director-general, none knowing better how to gain the support of members and to inspire confidence and enthusiasm among his colleagues. "The fight is won," he said to the Chicago delegation, when first he met them in Washington; "all that is necessary is to let them see that we are thoroughly in earnest, and show them the courtesy of being on hand while they go through with the formality of handing over the prize to us."

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As to the selection of the site, it may here be further stated that it was first intended to erect the Exposition buildings around the lake front between Madison street and Park row. A portion of it was covered with water to an average depth of fourteen feet, and instead of filling it in, it was proposed to erect over it a flooring covered with a canopy from the edge of the lake to the government pier. Among the advocates of the Jackson park site was the Illinois Central railroad company, which contributed largely of its means. To Garfield park the main objection was its lack of transportation facilities, for it could only be reached by street cars. By Mr Pullman, as president of the Palace Car company, a large sum was offered for the location of the Fair in the neighborhood of the town which owes to him its existence; but this was more than twelve miles from the business quarter of Chicago.

The practical work of the Fair began early in 1891, when architects were appointed, and submitted their plans; contracts were let, and work was commenced on the grounds. It was not until June that the buildings were begun, and at the close of the year they were in various stages of advancement, from the flooring to the cornice line, the city of the Fair looking more like a thicket of scantling than the group of palaces which later it became. The Woman's building was the only one under roof; the brick walls of the Art palace were still unfinished, and the Manufactures building had not risen above its thirty and a half acres of floor. But day by day architects and workmen went on building, sculptors modelling, and decorators coloring, until at length these temples of industry began to assume their present shape.

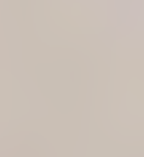
By one who visited the grounds in the autumn of 1892 the aspect of affairs is thus described: "About ten thousand employés and workmen were scattered over Jackson park; yet at every unfinished building the work seemed to be in semi-suspense, or to have the air of an industrial festival. Deliberation was the order of the day, flavored, however, with eager interest and willingness. Also deliberation was a necessity in three-fourths of the work, which required caution as well as judgment; for many were the ærial gymnasts perched from 60 to 260 feet in the air. Sky generalship of a high order was to be seen under the arching roof of Manufactures and Liberal Arts. Here, after months of patient lifting and fitting of unprecedented weights at great heights, each man had grown to know his duty intimately. From some lofty perch the foreman of a gang would conduct his men somewhat after the manner of the leader of an orchestra. Whenever he fell short of the mark, he would shout his general order to an assistant half way down, on the opposite side of the span, and the latter would give fuller instructions to another assistant on the floor. After each move all eyes would turn to the directing mind aloft. Under that roof feats were accomplished worthy to have called forth a wild surmise from the Egyptians who piled the pyramids."

In March, 1891, only a few of the states had made appropriations for the Fair, and France was the only foreign power that had decided to participate. That later all the states contributed, together with nearly a hundred foreign nations and colonies, was largely due, as I have said, to the excellent work accomplished by the Department of Publicity and Promotion, which resulted in the Exposition being known and discussed from one end of the earth to the other. In Europe an interest bordering on enthusiasm was aroused by the special commissions which made the tour of that continent, these envoys rendering most effective service in a field already prepared by judicious advertising.

The official catalogue of the Exposition is a volume of from 200 to 400 pages, published in English, French, German, and Spanish, being given to each of the main divisions, and with others for special departments, making about fifteen in all. For this concession was paid $100,000 in cash, with ten per cent of the gross receipts up to $500,000, and twenty-five per cent on all above that amount. For the preparation of the work nearly 1,000 employés were required, with 150 carloads of paper, 40 cylinder presses, and two perfecting presses, the latter capable of printing 20,000 sheets an hour.

COLUMBIAN COIN

For the first souvenir coin struck from the die, a check for $10,000 was paid to the treasurer of the Fair by a typewriter firm. The coins were offered for sale at $1 each in almost every city, town, and village in the republic, bankers and merchants sending orders in advance for from 50 to 25,000 of the first installment minted at Philadelphia. Four were reserved as prize coins, the one above mentioned, the four hundredth in order of mintage, as indicating the anniversary to be celebrated, number 1492, the date of Columbus' discovery, and number 1892, the date of the first issue of the souvenirs.


THE WORLD'S COLUMBIAN EXPOSITION CHICAGO ILL. U.S.A.
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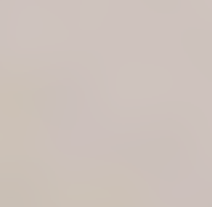
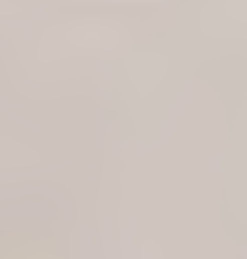
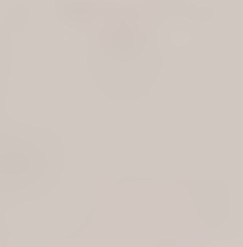
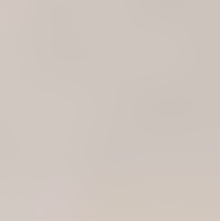
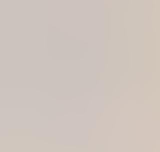










CHAPTER THE FOURTH

THE SITE, THE PLAN, AND THE ARTIFICERS

IN selecting the site of the Columbian Exposition there were several points to be considered. First of all it should, if possible, be on the shore of the lake, in a location not far distant from the business centre of Chicago, easy of access by land and water, and yet not intersected by streets or railroads; it must afford space, without crowding, for a group of edifices much larger in size and number than those of any former international exhibition, and it must contain as few improvements as possible, or better no improvements in the shape of buildings, so as to present no difficulty in the way of securing and preparing it for the purposes of the Fair. But the few vacant tracts on the outskirts of the city, such as fulfilled even a portion of these requirements, were of unsightly aspect, low, flat, marshy, and with no facilities for landscape or horticultural display. Only on the shore of Lake Michigan was there an element of the picturesque, and only at one point on that shore could the necessary conditions be obtained. This was in the section of the southern park system known as Jackson park, an almost triangular piece of land 586 acres in extent, stretching for a mile and a half along the shore of the lake, nearly seven miles southeastward from the business quarter of the city, and skirted on its western verge by the Illinois Central railroad. Connecting it with Washington park is the Midway plaisance, a narrow strip of ground a mile in length and somewhat less than a furlong in width, lined with a border of shade trees and dotted with miniature lakes. Here are some of the minor features of the Exposition, presently to be described.

JACKSON PARK

F. L. OLMSTED

As seen in its finished state, the Exposition site, with its winding walks and drives and waterways, its stately avenues, its floral designs, its statuary, fountains and ornamental bridges, all forming a scene of surpassing loveliness, owes little of its beauty to natural advantages, save for its outlook on the lake. When selected for the purpose, except for a few acres at its northern extremity, where a scanty covering of verdure was pushing its way across the unwilling soil, it was, as I have said, a mere patch of sand, cast up in successive ridges, by the waters of the lake, and almost untouched by the handiwork of man. There was nothing to form an architectural background, nothing to lend variety of form and feature to the dull monotony of the landscape. On one side the smoke of a great city dimmed the horizon; on another it was lost in the desolation of loneliness.

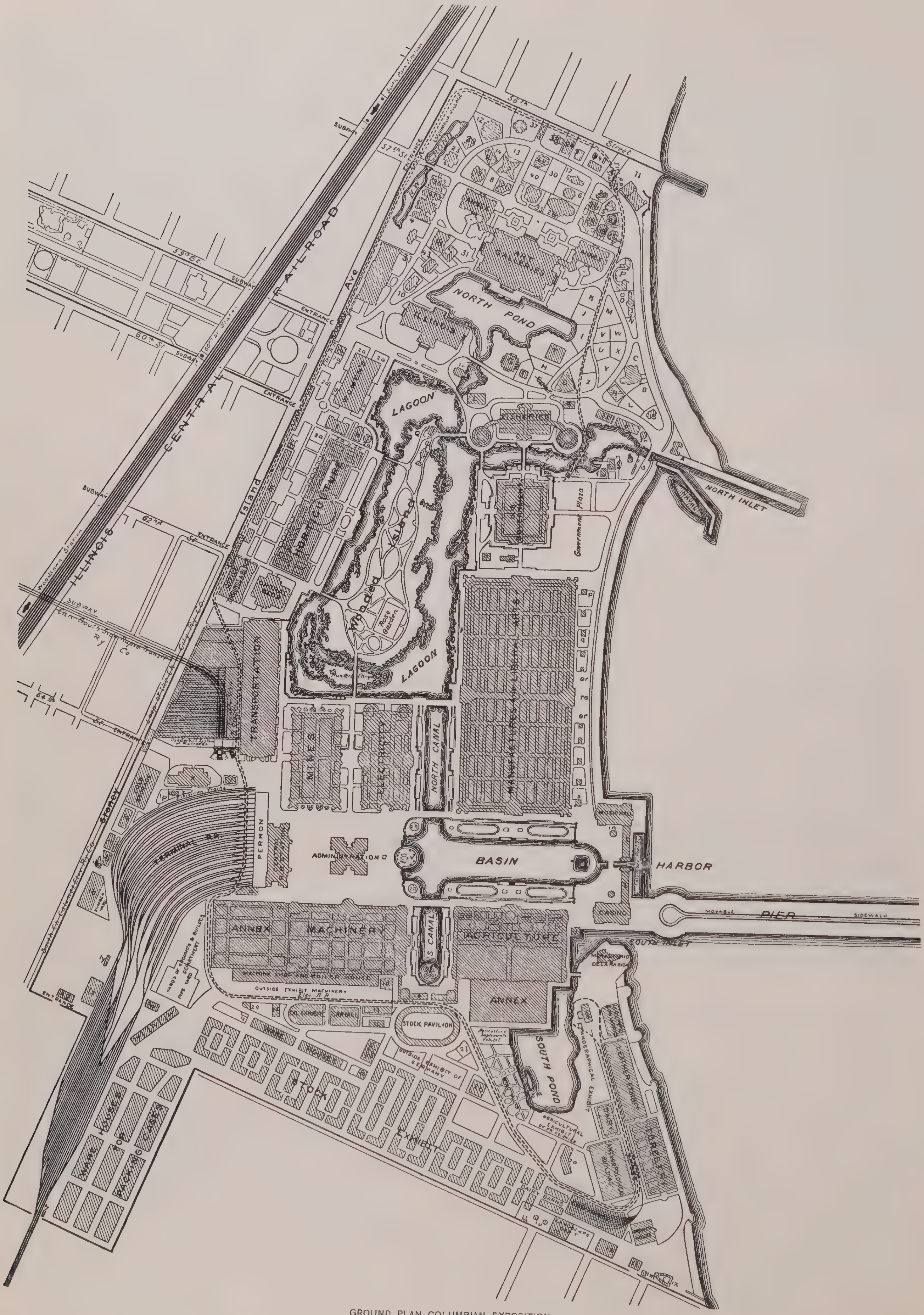
To convert this wilderness into a garden spot was the task undertaken by Frederick L. Olmsted and his late partner H. S. Codman, since deceased, both among the foremost of landscape designers. To the practised eye of these experienced artists, the very disadvantages of the site, its bareness, barrenness, and desert-like aspect, suggested a plan that was at once unique and appropriate. Here the expanse of an inland sea, its horizon unbounded as that of ocean, and its surface studded with craft of various kinds, bedecked in holiday attire, would more than atone for the absence of park-like scenery, while, as will presently be explained, the water of the lake could be so utilized in the grounds as to add to the general effect. Moreover, with the aid of steam dredges and modern processes of grading, plateaus and terraces might be created for the larger buildings, partly with the material taken from the marsh lands, and the excavations thus produced could be converted into a system of canals and lagoons. Thus it was that Mr Olmsted and his colleagues recommended as the best available site the ground of Jackson park, which for a score of years had remained almost unimproved in the hands of the park commissioners. After prolonged negotiation and strong and determined opposition from those whose interests lay in other directions, their consent was finally obtained, on condition that at the close of the Fair the tract should be returned in a condition suitable for further improvement as a public pleasure ground. In collaboration with the chiefs of the construction department, plans were then prepared and submitted for the preparation of the site, its subdivision, and its occupation by the many structures required. As related by one of the principal architects, "The leading motives of composition were to obtain such a disposition of the greater buildings as should make the best and most effective use of the natural conditions of the ground, when modified and corrected by the art of the landscape architect; should give to these buildings a proper and articulate relation one to the other, and also to the water-system of the park; should group them in a formal and artificial manner at those points where their great size and necessary mutual proximity invited a predominance of architectural magnificence, or picturesquely and incidentally, where the conditions of the landscape were such as to forbid a close observance of axial lines and vistas. But all these dispositions were made subordinate to the situation furnished by the wide expanse and horizon of the lake, so that the important element of composition should have its due value from all the principal points of observation."

VIEW IN JACKSON PARK

Of all the difficulties that confronted the landscape artists, one of the greatest was to give to the grounds such horticultural embellishment as would form a tasteful setting for the terraces, statuary, fountains, waterways, and other decorative features, giving to them all possible advantages of floral and arboreal vegetation. On or near the sites of former expositions was an abundance of trees and shrubbery available for such purposes, but here no such conditions prevailed, for winter lingers long on the prairie lands of Illinois, and in early spring vegetable growth near the marge of the lake is retarded by the chill night winds that sweep over its surface. Hence it was decided to mask the few groups of stunted trees that lay scattered throughout the tract with such a covering of shrubbery as would hide their dwarfish proportions, and give to them the appearance of woodland foliage; also to plant the edges of the waterways with hardy aquatic plants, that would bear submergence, and near them a background of willows and bright flowering plants, with stretches of lawn as a further relief to the imposing structures of the great white city presently to be erected.

Making the best use of such materials as were at hand, a landscape effect was thus devised, befitting the group of edifices whose broad dimensions would be brought into stronger contrast by their environment. The use of waterways was also suggested, imparting to the mise-en-scene somewhat of a Venetian aspect, and giving color to the architectural features of the display by creating what has been termed a water show in the very heart of the land show. Here was a novelty of design which has been applied to excellent purpose by the skilled artificers to whom the landscape gardening was intrusted. Winding their way through the grounds in graceful and symmetrical curves, a system of canals and miniature lakes was constructed, dividing a portion of the site into a group of islets, connected by ornamental bridges, and fringed with the flora of the lakeside water system.

To accomplish this end, the water was first conducted from the northern inlet of the lake so as to encircle the wooded island, many acres in extent, lying opposite Horticultural building, and thence by means of a canal extended southward into the great basin in the centre of the avenue on which were grouped the principal structures. The bodies of water thus formed, together with other basins, lakelets and canals, were enclosed by



GROUND PLAN COLUMBIAN EXPOSITION

STATE SITES AND BUILDINGS.

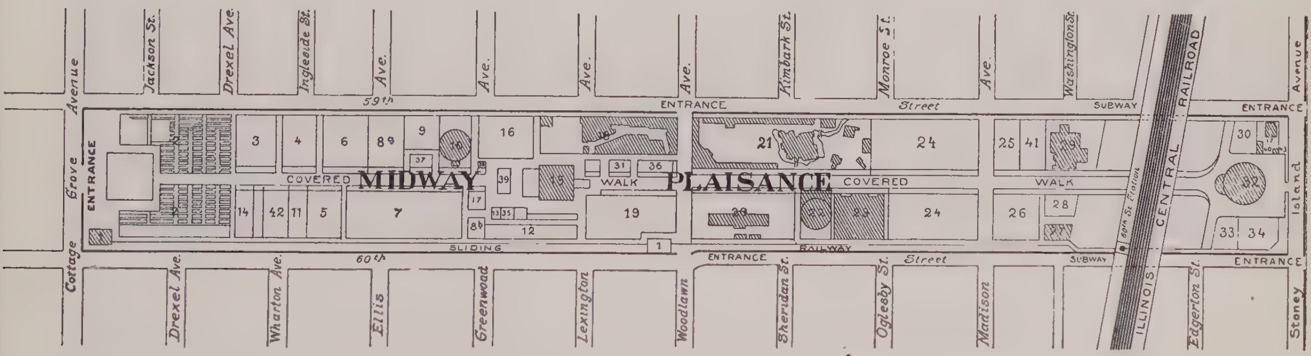
1 Arizona.
2 Arkansas.
3 California.
4 Colorado.
5 Connecticut.
6 Delaware.
7 Florida.
8 Georgia.
8 Mississippi.
8 Tennessee.
9 Idaho.
10 Indiana.
11 Iowa.
12 Kansas.
13 Kentucky.
14 Louisiana.
15 Maine.
16 Massachusetts.
17 Maryland.
18 Michigan.
19 Minnesota.
20 Alabama.
21 Missouri.
22
23 Nebraska.
24 Montana.
25 New Hampshire.
26 New Jersey.
27 Wyoming.
28 New York.
29 North Dakota.
30 North Carolina.
31 Ohio.
32
33 Pennsylvania.
34 Rhode Island.
35
36 South Dakota.
37 Texas.
38 Utah.
39 Vermont.
40 Virginia.
41 Washington.
42 West Virginia.
43 Wisconsin.
44 New Mexico.

FOREIGN SITES AND BUILDINGS.

A Great Britain.
B Spain.
C Germany.
D Sweden.
E Colombia.
G Brazil.
H Nicaragua.
I Costa Rica.
J Guatemala.
K Ecuador.
L Turkey.
M Norway.
N Austria.
O Ceylon.
P France.
Q Japan.
R Haiti.

OTHER BUILDINGS AND ARRANGEMENTS.

1 Workingman's Home.
1b Paint Shop.
1c Logger's Camp.
1d Pump House.
1e Colonnade.
1f Obelisk.
1g Indian School.
1h Tool Shed.
1i Dwelling.
1k Sewage Cleansing Works
1l Oil Tank House.
1m Pump House.
a Fire and Guard Station.
b Clam Bake.
c Restaurant Café de Redon.
d Heliograph.
e Light House Exhibit.
f Weather Bureau.
g Life Saving Station.
h Type Life Boats.
i Angler's Camp.
j White Star Line.
k Puck.
l Children's Exhibit.
m Green House.
n Photo Building.
o Military Hospital.
p Van Houten & Zoon Company.
q Japanese Tea House.
r Music Stand.
s Waller, Baker & Company.
t Peristyle.
u Statue of the Republic.
v McMonnies Fountain.
w Fountain.
x Pennsylvania Railway Exhibit.
y Hygeia Cooling Plant.
z U. S. Wind Engine & Pump Company.

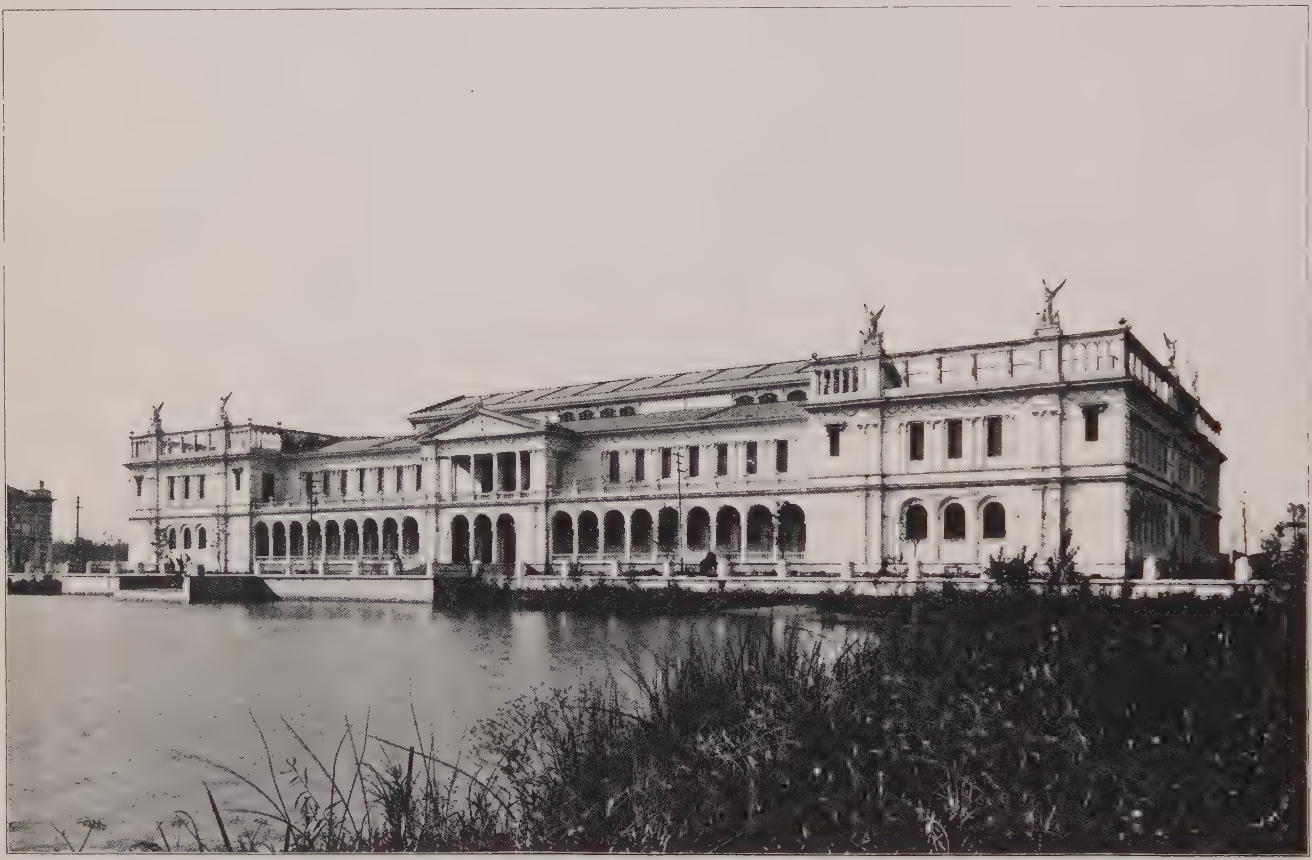


KEY TO MIDWAY PLAISANCE

1 Depot.
2 Nursery Exhibit.
3 East Indian Village.
4 American Indian Village.
5 Dahomey Village 150 by 195.
6 Captive Balloon 205 by 225.
7 Austrian Village 195 by 510.
8a Chinese Village and Theatre 150 by 225.
8b Chinese Tea House 55 by 100.
9 Morocco Exhibits 150 by 150.
10 Panorama of Volcano Kilauea 135 by 225.
11 International Dress and Costume Company.
12 Ice Railway 60 by 400.
13 French Cider Press 40 by 50.
14 National Hungarian Orpheum.
15 Ferris Wheel.
16 Algeria and Tunis 165 by 280.
17 Fire and Guard Station.
18 Street in Cairo 223 by 391.
19 Moorish Palace.
20 Turkish Village 190 by 450.
21 German Village 223 by 780.
22 Panorama of Bernese Alps.
23 Natatorium
24 Dutch Settlement.
25 Japanese Bazaar.
26 Hagenbeck Animal Show.
27 Railway Station.
28 Venice Murano Company.
29 Libbey Glass Company.
30 Bohemian Glass Company.
31 Persian Concession.
32 Circular Railway Tower.
33 Adams' Express Company.
34 Exhibit of Irish Industries.
35 Model St Peter.
36 Lecture Hall, Science of Animal Locomotion.
37 French Café.
38 Indian Bazaar.
39 Vienna Café.
40 Workingman's Home.
41 Irish Village.
42 Lapland Village.
43 Diamond Match Company.

grounds arranged in the manner most appropriate to the places through which they passed, some in the shape of lawns and terraces, planted with flowers and shrubbery, others in the form of embankments of stone or brick, surmounted with balustrades, and with steps and landings in front of the entrances to the various buildings. The island itself was almost covered with foliage, and with thousands of transplanted trees, representing most of the varieties of timber found in the United States.

Together with the land adjacent to Horticultural hall and Midway plaisance, this island was assigned to the department of Horticulture, and became one of the most attractive portions of the grounds, a scene of restful, sylvan beauty, with shady groves of cool recess, and with myriads of floral and other contributions from our own and foreign lands. In the preparation of these grounds the entire surface was raised by several feet, covered with a rich black soil and with fertilizing substances, and so arranged as to conform as far as possible to the wishes of exhibitors without impairing the general effect. Meanwhile circulars were addressed to the superintendents of parks and owners of private conservatories in every land, and with most favorable results. So liberal indeed were the responses, both in the way of donations and loans, that contributors were requested to forward only a limited number of their choicest and rarest specimens. From a single firm came the offer to expend $40,000 on a collection of orchids, including every species that would bloom during the term allotted to the Fair. From Great Britain and Germany came applications for more space than could be granted; from Holland and Belgium the promise of a magnificent display of bulbs, rhododendrons, and camellias, and from France a proposition—respectfully declined—to decorate the entire area surrounding the Horticultural and Woman's buildings. With rare exceptions exhibits were promised by all other foreign countries, near and distant, Jamaica for instance contributing a large number of economic and ornamental plants, and Australia the giant tree-fern, the staghorn fern, and other antipodean curiosities.



WOMAN'S BUILDING

In the nursery grounds applications were made for four times the available space. Here is illustrated the growth of fruit trees, from the seed bed to the orchard in bearing, with a miniature vineyard, a citrus grove, peach garden, and a cranberry patch, the last explaining the latest methods of irrigating the plants. By many of the states and by several foreign countries exhibits were forwarded of various kinds of fruit, others, whose fruit were out of season at the opening, being represented by models in wax, presenting exact imitations as to color, size and form.

The grounds are provided with seats and resting places, where visitors, when weary of gazing on the handiwork of man may find relief in viewing the broad expanse of the lake, now smooth and clear as crystal, now ruffled with squalls as sharp and sudden as ever the ocean indulged in. From the southern portion of the grounds a pier was built far out into the lake, which serves not only as a landing place but as a promenade and breakwater, enclosing a harbor large enough for the accommodation of pleasure craft and for minor marine exhibits. Here was landed a large portion of the freight intended for the Fair, and by some this is preferred as a means of access to the grounds, with steamers passing to and fro at intervals, while from the shore end of the pier, and for two-thirds of its length, divided by a spacious waterway, the grand avenue of the Exposition extends westward toward the Administration building. By giving to its floor a slight upward slope, as it leads into the waters of the lake, the pier is so constructed as to afford an uninterrupted view of the entire avenue, with the imposing structures that flank it on either side, displaying at a single glance the architectural grandeur of the design.

HORTICULTURAL BUILDING

For those who prefer to travel by land there are branch lines from many of the railroads centring in Chicago to the main entrance to the grounds. There are also cable, electric, and horse-cars, capable of conveying to and from Jackson park many thousands of passengers an hour. For such an Exposition, or rather Exposition city, with its magnificent distances, it was necessary that means of interior locomotion should be furnished, and for this most ample facilities were provided. All the cars land their passengers at convenient stations, where careful provision is made for the protection, comfort, and accommodation of visitors. An elevated railroad, run by electric power, passes through the grounds, stopping at convenient points, connecting with a station at the Midway plaisance, and after making the circuit, returning to the point whence it started. From the general railroad depot on the southwestern verge of the grounds we pass into a spacious avenue and between the facades of the main buildings, extending in unbroken perspective toward the lake. In front is the hall of Administration, beyond which the avenue takes the form of a great square or court, where thousands may gather or disperse without crowding or inconvenience.

While many avail themselves of the elevated railway, a more favorite mode of travel is along the waterways, which are nearly three miles in length, and cover an area of sixty-one acres. Through a series of canals, basins, and miniature lakes, small craft of every description are in readiness to convey the visitor to all the principal points of attraction, affording a kaleidoscopic view of the architectural and floral display, the fountains and statuary, and the landscape effects, such as leaves on the mind an impression that will not be readily effaced.

From the central basin, and the great square adjacent, flanked by the more imposing structures, whose well balanced outlines stand forth in bold relief against the sky, with holiday attire of flags and drapery, with floral designs and green parterres, and iridescent fountains, is presented one of the most striking pictures in the display. Still more remarkable is the effect when at night the court is encircled by a tracery of fire through a chain of electric lights, and with electric effect under the fountains and waterways, imparting to this wondrous spectacle a brilliance almost too dazzling for human eye to rest on. Yet there are many who would prefer that this central space should owe less of its attractiveness merely to ornamental features, and that it had been left alone without other setting than the majesty of the buildings which surround it.

THE WOODED ISLAND

Alighting either at the pier, or at the railroad station, which face each other on opposite sides of the grounds, the visitor, passing along the grand avenue, finds himself, let us say, at the point where the canal and great basin intersect. It is perhaps from this point that he can most fully realize the grandeur of the architectural design and its harmony of detail. Approaching the shore end of the pier, he will see toward the right on a headland, from which he is separated by the southern inlet of the lake, a model of the convent of La Rabida, where Columbus tarried while maturing the plan of his expedition. Here are displayed among other exhibits, a number of Columbian relics, together with those of the early explorers of Spanish-America, collected from Spain, Italy, the West Indies, and other old and new world countries. South of the convent is the Forestry building, a unique and tasteful structure of the rustic order, and near to this stands the Dairy building, where are displayed all the latest and most approved appliances for the manufacture of dairy products. Entering the grand avenue, the visitor will pass between two of the largest of the Exposition structures, having on his right the Manufactures and Liberal Arts building, and on his left the Agricultural building. Of these, as of other edifices, I shall give a detailed description elsewhere, presenting here only a general outline of the plan and of the relation of its several parts, together with a few passing features of general interest.

As to the Manufactures building, the main structure of all, the first thing to attract attention is the immensity of its proportions, though relieved from monotony by its severely classical style of architecture, its rows of arches and fluted columns, and the elaborate ornamentation of its facades. Covering a surface of more than thirty acres, and with a floor space of more than forty acres, it extends for nearly one-third of a mile along the shore of Lake Michigan, another side fronting on the grand avenue, a third on the canal and artificial lagoon, while the fourth is separated by a narrow strip from the United States Government building. A mile, less one hundred yards, in circumference, this gigantic structure occupies more than double the area on which stands the pyramid of Cheops, and more than six times the area on which was reared the national capital. Under its roof could be placed, with room to spare, the Vendome column or the London monument, and from the floor to the highest point of its central span is but a few feet less in altitude than the pillar on Bunker hill.

CONVENT OF LA RABIDA

From this colossal edifice the eye turns with a sense of relief to the Agricultural hall adjacent. Built in the style of the renaissance, and with statuary, typical of agricultural pursuits, grouped in its vestibule and around its entrances, this is one of the most tasteful of all the Exposition structures. Though covering a space of thirteen acres with its annex, it does not offend the taste by extravagance of proportion, and in contrast with the aggressive and dominating edifice which frowns upon it from the opposite side of the avenue, suggests rather beauty and chasteness of design. The annex is intended for the accommodation of surplus exhibits, and contains a large assembly hall for the use of agricultural associations. Southwest of the annex, and across the line of the elevated railroad, is the Stock pavilion, devoted to the purpose which its title indicates, and still further south are the stock-yards and sheds, with forty acres of covered and twenty of open space, where is held such a live stock exhibit as only Chicago can produce.

Continuing on our way through the grand avenue, we come to the Machinery hall, near the southern line of the park, and separated by a waterway from the Agricultural building. Modelled after the style of the Spanish renaissance, its facades are richly adorned with colonnades and other architectural embellishments, adding greatly to the artistic effect of the central plaza. In its centre is a wide open space, in which is perhaps the largest collection of machinery in motion that has

IN HORTICULTURAL HALL

ever been brought together. An interesting feature is the display of electric power, and the power station itself, whence currents are distributed, conveying not only motive force, but heat and light throughout the buildings, and connecting outside the grounds with the telegraph and telephone systems of the world. Only at this station is the use of steam permitted, motive force being elsewhere conveyed by electrical transmission, and to a minor extent by compressed air. Not only is machinery driven by electricity, but the railroad which runs through the park, the boats that ply on the lakes, the elevators, and even the fountains are operated by electric power. Including its annex the Machinery hall is the second in size of the Exposition buildings, second that is, to the hall of Manufactures and Liberal Arts.

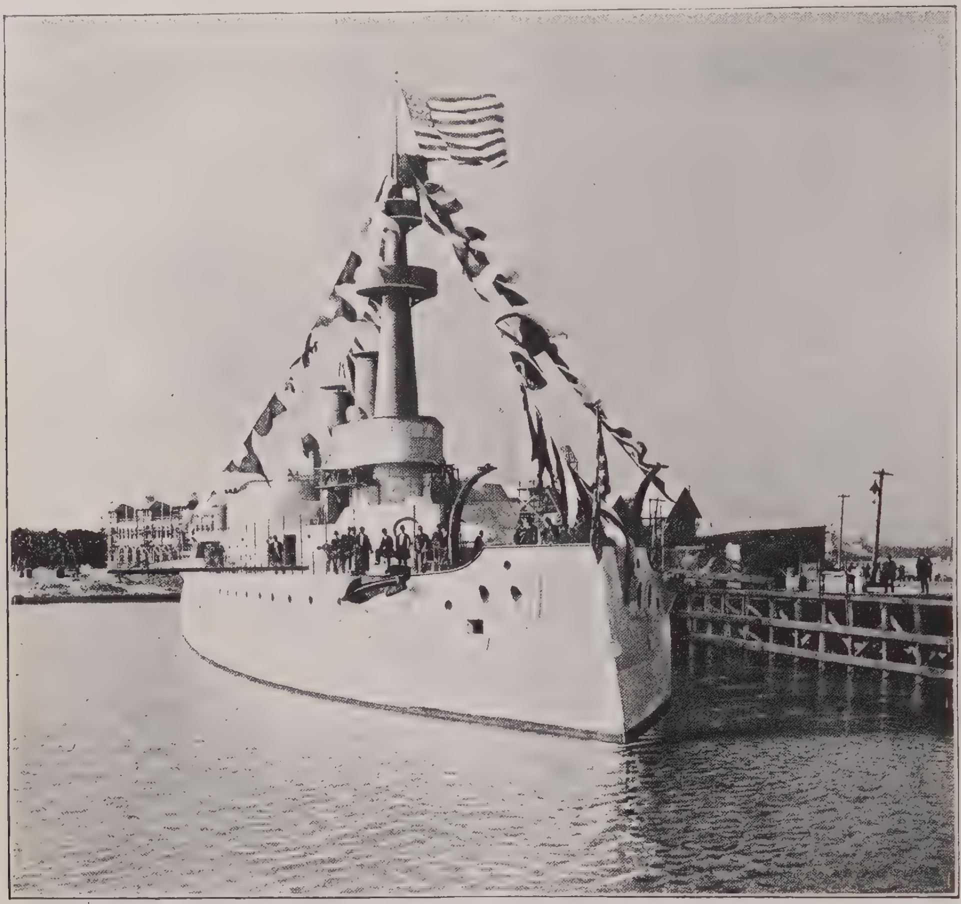
Opposite the Machinery hall and in the centre of the grand plaza is the Administration building, a most tasteful and sightly edifice, perfectly appropriate to its location and environment, and except perhaps for the Art palace, esteemed as the architectural gem of the Exposition. At the main entrance is a heroic statue of Columbus, and on either side of the several entrances are groups of emblematic sculpture. From its central rotunda rises in graceful lines a gilded dome to a height of 275 feet above the grounds, and resembling somewhat the dome of the Invalides, under which rest the remains of the great Napoleon. West of the building is the principal station for all the railroad and other transportation systems converging on the park, and, as I have said, the only station where cars entering the enclosure of the grounds are allowed to land passengers. Here are the headquarters of officials connected with the Fair, where all employés receive orders and make reports, and where visitors, agents and state and foreign commissioners transact their business. Here also is banking and postal accommodation, and other provisions for public comfort and convenience, not least among which is a large and well appointed restaurant.

Nearly opposite the Administration building, and separated by the main canal from the hall of Manufactures, the Electrical building rears its somewhat fantastic front against the sky, its structural design tending rather to illustration and utility than to proportion or symmetry of outline. Its contents form one of the most interesting of all the exhibits. Here, for the first time in the history of the world, is exemplified in all its details the progress of this the youngest and most progressive of modern sciences, from its earliest inception to its present stage of development. In the electrical exhibits many foreign nations are represented, and to all foreign applicants space was allotted. Special efforts were also made by their several commissioners to form historical collections of all the apparatus used in electrical experiments, some of them long antedating the invention of Samuel Morse. From a list prepared by the chief of this department, the names of the more prominent electricians are inscribed on the friezes above the peristyle. In addition to its other purposes the building is used for the display, but not for the generation, of electricity. At night it is illuminated by 450 arc and 10,000 incandescent lamps, the glare of which is subdued by the artistic blending of colors.

STATUE FRONT OF AGRICULTURAL HALL

Crossing a portion of the central plaza, we come to the last of the mighty structures by which it is surrounded, and that is the hall of Mines and Mining, a massive but elaborate edifice, built somewhat after the style of the later Italian renaissance, but with features of the French school in its general design. At various points are emblematic decorations, among them a group of figures above the principal entrance, typical of the industry to which the building is devoted, and a colossal female form in semi-recumbent posture, brandishing aloft the inevitable miner's pick. The exhibit includes large and valuable collections of ores, minerals, and mining products of every description, with machinery and illustrations of the various processes of mining and metallurgy, and of the application of minerals to artistic and industrial purposes.

From the hall of Mines and Mining, leaving on the left the railway station, we pass to the Transportation building, from the lofty cupola of which may be seen to excellent advantage the general effect of buildings and grounds. Here, for the first time in the history of our great world's fairs, a special structure has been set apart for illustrating the progress of transportation in all its branches, whether on land, on water, or in air, from a hand-cart to a locomotive, and from an Indian canoe to the swiftest of modern clippers and ocean going steamers. A feature of the display is its illustration of historical development, with a collection of models and reproductions such as has never before been brought together. Passing through the main entrance, in the shape of an immense arch, overlaid with gold leaf, on which are depictured various methods of ancient and modern transportation, we enter the central avenue, on either side of which is a row of locomotives ranging in power from the lightest to the heaviest engine in use, and with their metal work so highly polished as to give



"ILLINOIS," UNITED STATES NAVAL EXHIBIT

to the perspective a striking and novel aspect. Connected with the building is the largest annex on the grounds, for the accommodation of the more bulky exhibits. Of the entire floor space, covering with the annex about fourteen and a half acres, more than one-fourth has been allotted to foreign participants, and with applications for additional room which it was found impossible to afford.

On the roof of the Manufactures building was erected the most powerful search-light in the world, the rays of which are visible at a distance of sixty miles, and bring into view, as distinctly as beneath the meridian sun, any portion of the Exposition grounds. It has a reflector seven and a half feet in diameter, with 25,000 candle power, and was constructed by the Nuremberg electrician, Schuckertt, whose marvellous display at the recent electrical exposition at Frankfort gained for him a world-wide fame. At an elevation of one hundred feet are two others a little smaller in size. With the rays of these several lights, projected in parallel, converging, or diverging rays, sheets of flame may be suspended in air, and the skies, the land, or the waters of the lake lit up for miles around Jackson park. Add to this the search-lights on the Administration and other buildings, the 6,000 arc lights and the 100,000 incandescent lamps with which the place is illumined by night, and we have a spectacular display such as was never before presented to mortal gaze.

A little further to the north is the Horticultural hall and greenhouses, forming a vast conservatory, and in its centre a spacious dome, beneath which is a collection of palms, tree-ferns, and bamboos. Here are displayed nearly all known varieties of plants, flowers, and seeds, artificial heat being applied to tropical and sub-tropical species. A feature in this department is a cave lighted by electricity, and from which the light of day is excluded, for the purpose of demonstrating whether plants will grow and thrive under such conditions.

Passing onward, still in a northerly direction, we come to the Woman's building, facing the lagoon and wooded island, around which are grouped most of the structures in the northern portion of the grounds. Designed by a female architect, its interior decorations and exhibits are also of female handiwork, and its control is entirely in the hands of the Board of Lady Managers. Though at all our great world's fairs there have been displays of women's art and industry on a gradually increasing scale, this is the first time that a special edifice has been devoted to that purpose, but with the principal exhibits distributed among the main department of the Exposition. Here also is the only structure in which are roof and hanging gardens, the former covered with awnings, and adorned with tropical foliage. Many of the departments have been decorated by state or foreign committees; the main parlor, for instance, by the ladies of Cincinnati, another room by those of California, a third by those of Ohio, while the library owes its furniture and decoration to the state of New York. The colored women of the South are also represented by cotton exhibits, and by a rice-straw pavilion, and Indian women by a contribution of richly woven Navajo blankets.

Conspicuous for its location is the Illinois state building, between the Woman's building and the Art palace, located somewhat obtrusively in front of the latter, and the more so since it is the only state edifice to which a site has been allotted among the main structures of the Exposition. The intrusion is, however, pardonable, when we consider that Illinois assumes the first position as to scope and plan of collective exhibits. Moreover, the size of this edifice, covering as it does a space of three acres, would have given to it disproportion of outline if placed among the minor state and territorial buildings.

As to the Art palace, with its severely classical style of architecture modelled after the Ionic school, its purity of design and symmetry of proportion, there is but one opinion—that it is of itself one of the most artistic features in the Exposition. Exception may, however, be taken to its low, broad dome, surmounted by a colossal and long-winged figure of victory. Rectangular in plan, it is divided by a spacious nave and transept, lined with statuary and architectural casts, into four main galleries, allotted respectively to the exhibits of the United States, Great Britain, France, and Germany, with smaller apartments and annexes for other collections. With a mile of hanging space, sufficient room is left between the rows of pictures to avoid the appearance of overcrowding, which too often mars the effect of similar displays. It is worthy of note that the amount of space applied for by foreign nations was larger than at the Paris Exposition of 1889, the French as usual being strongly represented, and with a collection worthy of this nation of artists. Intended as a permanent structure, the building is of brick, glass and iron, without woodwork or other inflammable material, and is considered externally fireproof, giving to exhibitors reasonable assurance as to the protection of their treasures from possible conflagration. The grounds in the immediate neighborhood are profusely decorated with groups of statuary and with imitations of Grecian art, among them the Choragic monument and the Cave of the Winds.

On the opposite side of the northern basin, leading from the main lagoon, we come to the Fisheries building, with its marine and fresh-water aquaria, and angling exhibit in circular annexes connected by arcades at either end. With their clean-cut lines, their roofs of old Spanish tile, and their general simplicity and airiness of design, these buildings are in pleasing contrast with the more imposing edifices in their neighborhood, and yet not out of keeping with the general severity of plan. In the arrangement of the capitals, cornices, and other details, a certain fantastic humor is displayed, ichthyological shapes being used as the motif of the design. In the exhibits are found well nigh every form of life that finds a home in river, lake, or ocean, from gold fish, coral insects, and sea anemones to the hideous devil-fish that Victor Hugo has described, with masses of moss-covered rock from which flow streams of water in never failing supply.

IN THE ESKIMO VILLAGE

Between the Fisheries building and the hall of Manufactures and Liberal Arts is the United States Government building, modelled somewhat after the style of the National museum at Washington, but of inferior design. First of all there is the orthodox government dome, rearing its head 150 feet above the ground, with a row of projecting windows, and a lantern resembling a miniature observatory perched on its summit. The structure is mainly of corrugated iron, not very chaste in pattern, nor especially attractive in color and outline. In the act of Congress creating the World's Columbian Commission the secretary of the treasury was instructed to dispose of this edifice at the close of the performanee, giving preference to the city of Chicago; but of all the Exposition buildings this is probably the one her citizens would least care to retain for permanent use.

In the construction of these, the unsubstantial fabrics of the Fair, nearly all of which must be removed or converted to other uses, one of the most difficult problems was the selection of suitable materials. For the framework of such huge, if temporary buildings, iron and wood must of course be largely used; but for the casings, the mural decorations, and other ornamental and accessory work, a substance must be found which would be at once inexpensive, plastic, and durable. All these qualities were united in a combination of plaster of Paris with jute or other fibre, resembling a stucco and commonly known as staff, one readily manufactured and handled, easily moulded and colored, and such as enabled the architects to complete their designs at small expense, while giving to their structures all the stability required. The group of edifices that form the housing of the Fair have been aptly termed a sketch in lines of iron and wash of plaster; for with this bright, soft compound most of the mammoth skeletons were clothed and adorned, and with its aid have been reproduced some of the choicest designs in ancient and mediæval architecture.

After making the circuit of the grounds, except for the space allotted to the several states and foreign nations, there still remains one of the most interesting of exhibits, that of the United States naval department. In front of the Government pavilion, and apparently moored to the wharf on the northeastern shore of the park, is a full-sized model of one of the coast line battle ships recently added to the American navy, 348 feet in length by 69 in width, and named the *Illinois.* Though built on piles, with its hull of brick and concrete, finished with cement, it appears to float on the water, and only after a close inspection can the visitor distinguish it from a genuine ironclad. On board are all the appliances of a man of war, with batteries of breech-loading rifled cannon, with Gatling and other rapid-firing guns, with torpedo tubes and nets and spars, and with all the equipments needed to give to it a thoroughly realistic appearance. During the term of the Fair the *Illinois* will be virtually in commission, with officers and seamen, marines, and mechanics, subject to the strictest of naval discipline, and with uniforms resembling those in use during the revolutionary war, the war of 1812, and the war with Mexico. There are cabins, state-rooms, and berths, with mess-rooms and mess-tables, as provided by navy regulations; there are daily drills and exercises at hours convenient to the public, while on the upper deck and the bridge above is displayed the method of handling guns and search-lights, and the appliances at the disposal of the commander when taking his ship into action.

ARABIA, MIDWAY PLAISANCE

Scattered throughout the grounds are minor buildings and exhibits, among the more interesting of which are a workingman's home, a logger's camp, an Indian school, a heliographic exhibit, a lighthouse, a weather bureau, a life saving station, an angler's camp, a children's exhibit, a military hospital, a Japanese tea house, and an Esquimau village.

West of the Woman's building is the Midway plaisance, where we come to a special department, including many interesting features, and forming what may be called a bazaar of all nations. Here is a street in Cairo, similar to the Rue de Caire at the Paris Exposition of 1889, but on a larger scale; there are panoramic and theatrical displays, cafés and refreshment booths, with scores of devices and appliances for comfort, instruction, and entertainment, from a model of St Peter's to a Hungarian orpheum. There are also Dahomey, Indian, Chinese, Turkish, German, and other villages, tenanted by living representatives of savage, civilized, and semi-civilized nations. Here is an immense captive balloon, an ice railway, a Moorish palace, Japanese bazaar, a Bohemian glass factory, an exhibition of Irish industries, especially that of lace making, and a circular railroad tower.

North and west of the Art palace is the space allotted for the buildings and exhibits of the states and territories, nearly all of which are represented either officially or by private contributions. Most of them are on a modest scale, not more than an average of 75 by 100 feet, and some of them so fashioned as to represent historical or other features of local or national interest. The New York design, for instance, is the old Van Rensselaer residence of its metropolis, while Pennsylvania presents a building, the front of which is a fac-simile of Independence hall, with its liberty bell and huge dial clock as in the days of seventy-six. In the Massachusetts edifice is a reproduction of the Hancock house, of Boston fame, while Maryland gives us her state capital; Florida, a model of old Fort Marion; North Carolina, the Tyron palace; California and Texas, old Spanish missions, treated in different styles of architecture; Iowa, a reproduction of the famous Sioux City corn palace; and Virginia, a fac-simile of Washington's mansion at Mount Vernon.

Southeast of the Art palace, and partially fronting the shore of the lake is the ground set apart for foreign participants, the best site being allotted to Great Britain, near the northern inlet. Of all the gratifying features of the Exposition, perhaps the most gratifying was the cordial coöperation of foreign powers, who, for the most part without prospect of material benefit, contributed, apart from the value of their exhibits, a larger amount than the total appropriations and subscriptions of all the states and territories of the American republic. Many of them, as I have said, erected their own government buildings, and to others concessions were granted for the erection of theatres, restaurants, stores, and other structures in which to illustrate their several customs, usages, and modes of life. From nearly all the civilized nations came applications for space, while at no other of the great world's fairs have more than half of them been represented. Even Russia, which had hitherto taken no part in such exhibitions, applied for and was granted 100,000 square feet of room, promising to send, among other exhibits, a collection of art treasures never before permitted to leave the realms of the czar.

RUE DE CAIRE

It may be said indeed, that largely through the efforts of the management, an interest, ripening into enthusiasm, was created in this festival of art and industry throughout the world. Of this we have sufficient evidence in the general character of the exhibits, and in the applications for space by domestic and foreign exhibitors. So ably were affairs administered that, notwithstanding the vast area at the disposal of the managers, their difficulty was not to secure, but to accommodate participants. On the first of October, 1892, after allotments to a large number of applicants, there remained at their disposal somewhat less than 3,000,000 square feet. But at that date the applications from foreign countries alone were for 2,500,000 feet, while state, municipal, and individual applicants from every portion of the United States asked for a total of 5,600,000 feet. Hence even at this early period, it became evident that there would not be room for much more than one-third of the proffered exhibits. More-

BEGGARS OF ALGERIA

AN ARABIAN LADY

over, new applications were being received by every mail, and judging by the precedent of the Centennial Exposition, would continue to be received well into the summer months. Under these conditions the managers decided to follow the rule established at other international exhibitions, which was to divide the available space about equally between their own and foreign lands, though giving to the former a slightly larger proportion, in view of the area, population, and industrial development of the United States. Thus to foreign countries were assigned 1,300,000 square feet, or a little more than half the space requested, and to home exhibits, 1,600,000 feet or less than one third of the space applied for, and probably less than one sixth of the space to be applied for. Offered as it has been an almost unlimited choice of materials for the great display, the management has been enabled to present to the world a collection such as in value, variety, and certain features of artistic excellence, has never before been equalled.

Of the magnificent proportions of the Fair there can be no better illustration than the mere fact that the space allotted to foreign exhibits is greater than the entire space occupied by most of the previous international expositions. But even this conveys only a feeble idea of the feat accomplished by the managers. We must consider also the special difficulties overcome in the preparation of the site, in converting that site into a garden spot, filled with landscape effects of most artistic design, in constructing all these mammoth edifices within a briefer period than is often required for the erection of a single business block, and in the coördination of the several plans under a system adapted to the needs of the time and place. That the work has been well done will not, I think, be disputed; nor can there be any question as to the zeal, intelligence, and patient toil displayed in its execution. If here and there be evidence of lack of taste or judgment, the wonder is that among such a multitude of artificers there were not more serious shortcomings; nor should they be permitted to detract from the high standard of achievement realized by professional skill and enthusiasm.

VIEW IN JACKSON PARK

When first it became known that Chicago had assumed the task of presenting to the world the world's progress in arts, inventions, and industries, there were those who prophesied that she would be found unequal to the occasion. None doubted as to her resources immediately available, as to enterprise, adaptability, and skillful workmanship. But here was an exploit such as she had never before attempted, such as, except for Philadelphia, had never been elsewhere attempted, save by the most cultured and experienced of old-world communities. It was an exploit for which she had no special training or preparation, and what was more, it was thought to be one foreign to the genius of her citizens, whose motto "I will," applied according to the popular idea, only to material pursuits. By press and people the opinion was freely expressed that the work would have been better accomplished elsewhere, as at the national capital, under government control, or at New York, as the chief city alike of social, industrial, and commercial interests.

While from Chicago much was expected, it was scarcely thought there would be as a whole an artistic and harmonious display. Some buildings and exhibits there might be superior to any that had been; but here was hardly expected the discrimination to judge aright as to the artistic merit, or the symmetry of structural design; nor was it probable that, among so many architects, such unity of plan and treatment could be secured as would impart to the general aspect an air of impressiveness. At best we could expect only pseudo-art, or even a subordination of art to utilitarian aptitude, relieved here and there by individual features of excellence. That such ideas were erroneous has long since been conceded. Through the efforts of certain practical business men, subscribing and securing subscriptions for the necessary funds, a corps of architects was brought together, for the most part unknown to each other, and accustomed to plan and execute independently each in his own field, willing however to sink personal pride, unite for a common purpose, and accept one from the other mutual criticism and advice, so as to produce in this city of the Fair a unique and homogeneous spectacle, one where every design bears upon it the handwriting of the artificer, and where every building is adapted to its special use.

To the chief of construction, Daniel H. Burnham, and his late associate, John W. Root, whose death early in its formative period was a serious drawback to the Exposition, was mainly due this excellent choice of professional assistance. Opposing from the first the plan of throwing open the contracts to general competition, the chief urged on an unwilling committee the selection of men of approved reputation and ability, and that with such firmness and persistence that the committee finally yielded. In a report to this committee dated December 6, 1890, and signed at his own solicitation by all its professional advisers, he stated briefly and tersely all the advantages and disadvantages of the several modes of selection; first, that of a single architect, to whom should be intrusted the entire design; second, competition among the entire profession; third,

D. H. BURNHAM

E. R. GRAHAM

competition among a few; and fourth, direct selection. "Far better than any of the methods," he says, "appears to be the last. This is to appoint a certain number of architects, choosing each man for such work as would be most nearly parallel with his best achievements; these architects to meet in conference, and become masters of all the elements of the problems to be solved, and agree upon some general scheme of procedure; the preliminary studies resulting from this to be compared and freely discussed in a subsequent conference, and with the assistance of such suggestions as your advisers might make, to be brought into a harmonious whole. The honor conferred on those selected would create in their minds a disposition to place the artistic quality of their work in advance of the mere question of emolument, while the emulation begotten in a rivalry so dignified and friendly could not fail to be productive of a result which would stand before the world as the best fruit of American civilization."

Thus from Chicago, New York, Boston, and Kansas City, but mainly from the two first a staff of architects was chosen, whose work has, with rare exception, left no doubt as to the propriety of their selection. While receiving but a small proportion of their usual income, purely from love of art they devoted their time and talents to the enterprise with a zeal and enthusiasm worthy of themselves and of the trust which the nation imposed in them. As with the head of the construction department, so with the chiefs of sub-departments, all were men preëminently fitted for their task, fitted not only by training and experience, but by energy, skill, adaptability, and an almost phenomenal capacity for toil.

JOHN W. ROOT

Under the chieftainship of Mr Burnham, with his knowledge of men and executive ability, each of his staff of colleagues, while contributing to the general harmony of form, was enabled largely to embody his own ideas. Nevertheless, to preserve a certain uniformity of design, and bring each structure as far as possible into architectural relation with its neighbor, nearly all the original plans were to a certain extent modified. It is through these changes of plan, more perhaps than by the plans themselves, that the structural entirety was relieved from any trace of monotony or commonplace. Probably never before were brought together so many artificers displaying such collective ability, and though gathered from distant cities, working in unison for a common purpose. Only through this combination of skill, intelligence, and devotion to the interests of the cause was rendered possible the now accomplished fact. On Charles B. Atwood, the artificer of the palace of Fine Arts, one of the foremost of New York's architects, was conferred the appointment of designer-in-chief. By Richard M. Hunt was conceived the unique and graceful design of the Administration building. Through the ingenuity of George B. Post the facades of the Manufactures and Liberal Arts building were relieved of monotony. By Charles F. McKim were planned the symmetrical proportions of the Agricultural hall; by Peabody and Stearns the stately structure of the Machinery hall; by S. S. Beman the massive hall of Mines and Mining; by Henry Van Brunt the striking if somewhat eccentric Electrical building; by Louis H. Sullivan the commodious Transportation building; by W. L. B. Jenney the spacious Horticultural hall; by Henry Ives Cobb the fanciful and ingenious Fisheries building; by W. J. Edbrooke and his predecessor, Mr Windrim, the Government building; by F. W. Crogan the Naval exhibit; by Francis M. Whitehouse the group of buildings at the head of the pier, and by Miss Sophia C. Hayden, selected from a large number of competitors for beauty and harmony of design, was planned the Woman's building.

DION GERALDINE

W. L. B. JENNEY

E. C. SHANKLAND

To Mr Burnham's lieutenant, E. R. Graham, with his energy and attention to detail, was largely due the efficiency of the construction department. At the weekly meetings over which he presided were discussed by the members of the staff all questions relating to structural design, and thus in the execution of the work was secured a general uniformity of plan which might else have suffered from too much freedom of style. Nor should we omit the name of Frederick Sargent, the engineer of the electrical and mechanical departments, with his adaptation of the more recent and approved appliances; nor those of Dion Geraldine, formerly the general superintendent, and of E. C. Shankland, the engineer of construction, by whom were devised striking effects in wood and iron. All these and others, working together in accord as one executive body, have given to the city of the Fair its monumental and yet harmonious proportions.

In the management of this enterprise Mr Burnham and his associates have displayed an administrative faculty second only to their constructive and artistic ability; nor is it possible to speak too highly of the faithfulness and zeal with which they have discharged their manifold duties. Receiving his instructions from the board of directors, the chief gave to each member of the staff his own special orders, and these in turn to their subordinates, thus setting in motion the complex machinery by which the work was executed with the precision and system of a military parade. While in Mr Burnham was vested the general supervision and control, many points were referred to special experts or to the weekly conclave, and especially such as related to the ever recurring choice between the utilitarian and the artistic. Though the decisions of both were subject to the modification of the chief, there was seldom serious conflict of opinion, for everything was discussed and determined in a spirit of fairness and mutual toleration, every suggestion was considered, and every argument received a hearing. Thus were engendered a loyalty and devotion to the cause which spread from the chief to each member of his staff, and even to the army of mechanics and laborers, who needed no further stimulus to put forth their utmost endeavor. Here is one of the secrets of success in the structural development of the Exposition.

ADMINISTRATION BUILDING

Said a member of the Spanish legation, "The Chicago buildings are the buildings we should have seen in Paris, and those of the Paris exhibition are what we might have expected to find in Chicago." While the eulogy contained in this remark may savor of flattery, it is something more than flattery. If Chicago has not builded better than she knew, she has at least builded better than other people knew, and notwithstanding the monumental style of architecture, a style rendered necessary by the vast proportions of the display, she has more than fulfilled the high standard of excellence conceived by her corps of artificers. As with the Paris, so with the Chicago Fair, one of the most attractive features was its conception as a whole, its uniformity of scheme, the arrangement of its buildings on a consistent yet diversified plan, one permitting such individual features of technique and expression as would relieve it from sameness, and from the coldness of a merely classical composition.

In some points at least the Chicago display excels all others, as in the beauty of its site, bordered by the lake, and with its landscape gardening and waterways, forming a novel and artistic setting such as in few places were possible. Another feature is the profusion of ornamental and accessory work in sculpture, painting, and mural decoration, relieving what might otherwise be considered a too strict uniformity of design. But with all the luxury of ornamentation, none of these minor features were allowed to interfere with the general harmony of effect. Nor were any of the buildings erected merely to gratify a vulgar curiosity, or to appeal to the popular love of the marvellous.

"If," says one of the architects, in speaking of the buildings that surround the court, "each man had been permitted or encouraged to make his especial building an unrestricted exhibition of his archæological knowledge or ingenuity of design, we should have had a curious, and in some respects perhaps an interesting and instructive polyglot or confusion of tongues, such as in the early scriptural times on the plains of Shinar was so detrimental to architectural success. The show might have contained some elements of the great American style; but as a whole it would have been a hazardous experiment, and it certainly would have perplexed the critics. In respect to the architecture of the great court, therefore, it seemed at least safer to proceed according to established formulas, and to let the special use and object of each building, and the personal equation of the architect employed on it, do what they properly could within these limits to secure variety and movement." To some it may appear inconsistent to display modern industry in temples whose style of architecture carries the mind back to the days of Augustus Cæsar and of Pericles, to place, for instance, hydraulic presses in a building into which one passes between classic columns of an order devised more than a thousand years before printing was invented. But in other fields than this art has been made subordinate to the utilities.

That Chicago has carried out her self-imposed task with a loyalty and faithfulness, and with a skill and taste that have won even the admiration of rival cities, is perhaps the greatest of all her achievements. Had she merely given us an exposition equal to our other world's fairs, one in which were adopted their more attractive features, with such improvements as might be suggested by her own artificers, even this would have been to her credit. But her plan was based on an original idea, and in execution was no less original than in conception. Not only was that plan of wider scope, but in the main of more skillful design than anything witnessed at other international expositions. From Americans it has gained at least the acknowledgment that American art exists, and that in striking and genuine form, a form distinctively our own, and worthy of more than the cold recognition accorded in certain quarters. From the world at large this rich and imposing display, prepared for the world's instruction and entertainment, has received a just and intelligent appreciation, has added to the respect with which our country is regarded among all other countries of the earth, and has revealed to them something of the qualities which have won for us a foremost rank among the great sisterhood of nations.

WORLD'S FAIR MISCELLANY.—Among the many difficulties encountered by the Construction department was the intensely cold and stormy weather, accompanied with heavy snowfalls, which marked the winter preceding the opening of the Fair, one of the severest in the annals of Chicago. For weeks the buildings were capped with snow and ice, the melting of which caused a severe strain on the roofs, crushing in portions and causing slight interior damage. Even under this disadvantage work was continued as usual, and with such energy that by the close of January, 1893, not only the principal structures, but many of the state and foreign buildings were practically completed. So perfect was the attention to detail, that of nearly three hundred hydrants used on the grounds, not one was rendered useless by frost. Exhibits, however, both foreign and domestic, came forward but slowly, some vessels being ice-bound, and others delayed by heavy gales. Thus the work of installation was retarded, and here was the only serious mischief caused by this bleak Chicago winter, though a winter less harsh than in some southern portions of the republic.

On these, as on other Exposition matters, there were the usual exaggerations; for not only were several other cities jealous of Chicago, but the various sections of Chicago were jealous of the one to which fell the location of the site. A little before New Year occurred a thaw, which wrought most damage in the Manufactures building, and the effects of which are thus described by one writing of the Lake city: "Nothing could have withstood the tremendous power and weight of the snow. The corrugated sheeting of the gutter along the edge of the main roof curled up like paper, and was carried in great strips to the roof of the annex below. The wooden supports of the skylights were broken and twisted in a thousand shapes. Thousands of panes of glass were splintered. Great sections of the roof gave way, and fell to the floor below. An hour after the first disastrous accident another huge section of snow fell, crashing through the roof two or three hundred feet south of the first break, and leaving an opening fifty feet in length. So great was the concussion that a plate of glass, carried downward in the great mass of snow and splintered framework, was embedded in the floor and stood upright, as though placed on edge by a glazier."

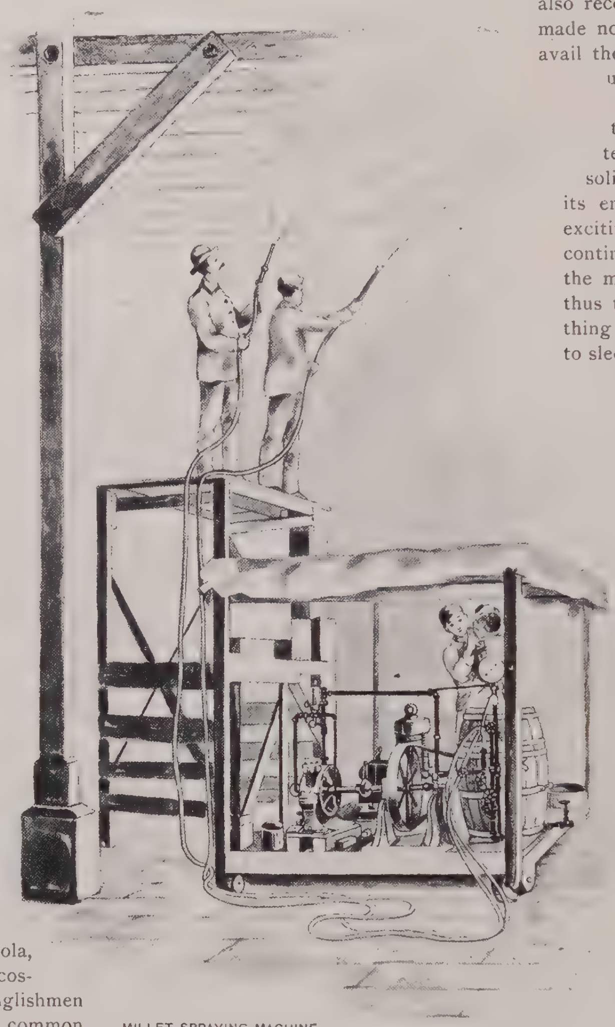
By others the damage was no less exaggerated, the cost of repairs for the roof of the Manufactures building alone being variously estimated at from $25,000 to $100,000, while as a fact its original cost was little above the latter amount. Said one of the officials, "The injuries done to the Manufactures and Agricultural buildings and the Machinery palace will not exceed $5,000." By another the damaged area was stated at 32,000 square feet, which could be replaced for fourteen cents a foot, or $4,480 in all.

About this time it began to be noised abroad that to complete the buildings and their repairs, and to install the exhibits by the 1st of May, would be a task beyond the powers of the managers. Said the Chicago correspondent of a leading San Francisco journal, writing from Jackson park in February, 1893: "This seems to me an impossibility. To be sure, those in charge claim that they will be ready on time. Still the cold-blooded fact stares one in the face that only the Woman's building is anywhere near completion inside and out." The writer did not seem to be aware that the Construction department had little to do with the interior of the Woman's or any other of the buildings, the decoration of which was left in the hands of the exhibitors.

To afford some faint conception as to the proportions of the Fair, it may be stated that, in the construction of the main buildings there were used nearly 20,000 tons of iron and steel and 30,000 tons of staff, many thousand tons of glass, and about 70,000,000 feet of lumber. For installing the exhibits 25,000 men were required, and during the term of the Exposition it was estimated that, including those in state and foreign buildings, 70,000 employés would be needed. As the opening day grew nigh, 15,000 men were engaged in cleaning the grounds, in painting, and making repairs, all contractors being required to complete their work as far as possible before the 1st of May.

To paint the buildings by the ordinary method was found to be an impossible task within the time allotted. A contrivance was therefore fashioned by Frank D. Millet, in charge of the Decoration department, whereby four men, working in unison, could accomplish the task of fifty. It consisted of a piece of gas-pipe so shaped at one end as to discharge a spray of paint, and from which a rubber hose connected with an air-pump driven by electric power. By the pump paint was drawn from a barrel and scattered by force of air over the surface to be coated.

The reasons for painting the buildings white, thus giving to the Fair its appellation of White City, Mr Millet explains in an article contributed to an eastern magazine: "Every experiment," he says, "which has been made to produce æsthetic effects of texture, suggested by the usual treatment of plaster objects, has resulted in partial or in total failure, and every time the warm white of the staff has been meddled with its glory has departed. But the conditions imposed by the climate, by the impossibility of securing a homogeneous surface, and by the exposure and consequent discoloration of a certain portion of the work, have made it necessary to apply some sort of paint to all the buildings. Ordinary white lead and oil have been found to give the best results, for the irregular absorption of the staff and the weathering rapidly produce an agreeable and not too monotonous effect, and the surface deteriorates less rapidly after this treatment."


MILLET SPRAYING MACHINE

Available for water transportation there is a number of steamers with a carrying capacity of several thousand persons. By water the trip occupies three-quarters of an hour; by rail about half that time. Among the steamers is one of the so-called whaleback boats, the shape of whose hull avoids much of the pitching and rolling which adds not to the charm of lake or ocean travel.

To a New York company was awarded the privilege of running boats driven by electricity on the waterways with which the grounds are interlaced, the company paying therefor one-third of its gross receipts. The plan was at one time to place on these waters vessels of every known description, from a Chinese junk to a Venetian gondola, manned by natives attired in national costume, with Thames wherries rowed by Englishmen and canoes paddled by red men, with common row-boats, express and omnibus boats so called, making the trip around the waterways, and stopping at the landing steps of the principal buildings. There were also to be catamarans, such as are used on the waters of Hindostan, rudderless craft built of unhewn tree trunks, held together by coir ropes, the palia dhundi, equally rude and rough in construction, with matting or coarse cotton sail; the Aleutian bidarka, the Thlinkeet shell, and others from all nations, civilized, semi-civilized, and savage.

By a prominent physician excellent advice was offered to intending visitors, from which I extract the following: "Before going to Chicago, determine whether you are physically able to go, and can afford it. Take with you no one for whom you are responsible, without the approval of your physician. When you reach Chicago make it your first business to secure wholesome and comfortable lodgings. Avoid excessive fatigue. Eat regularly, lightly, and frequently of plain and wholesome food. Drink moderately and carefully, avoiding unknown and unaccustomed beverages." It is also recommended that those who have made no previous arrangements should avail themselves of established and reputable agencies, as of the bureau of Public Comfort, to be mentioned later, rejecting all interested advice or personal solicitation. A great exposition, with its endless succession of vivid and exciting impressions, accompanied with continuous physical exertion, is one of the most fatiguing things on earth; thus the average visitor needs something more than a mere room in which to sleep or rest, while recovering from the tension of sight-seeing.

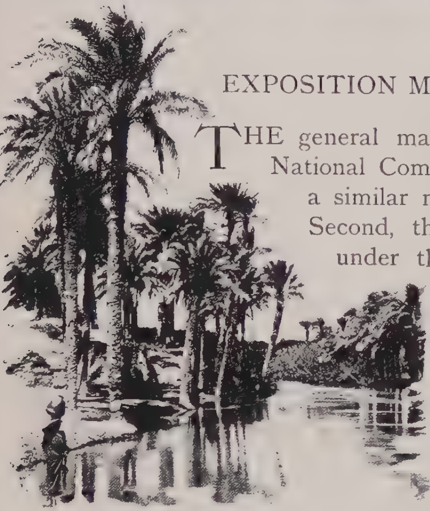
Before New Year's day of 1893 it was reported by the department of decoration that nearly two hundred banners had been made, and some 15,000 yards of bunting fashioned for decorative purposes.

At the close of the Fair the managers are required by the terms of their agreement to restore the grounds to such condition as the park commissioners may determine; but the best of the landscape features will remain.

From the sale of the Exposition structures or their materials a considerable amount should be realized, above the cost of their removal or demolition. The trusses for instance, and the metallic portions of the framework can be utilized for railroad and other purposes, especially those of the Manufactures building, which contains more steel and iron than was used in the construction of the Brooklyn bridge. Of the thousands of acres of pine and other timber that has been converted into buildings, some use at least should be made, if only for rough lumber or firewood, while the thousands of tons of glass will still retain a certain market value. Nevertheless it is probable that the managers' estimate of $1,500,000 as salvage is somewhat above the mark. Let the grounds and some few features of the Fair be preserved and Jackson Park will ever be a classic spot.

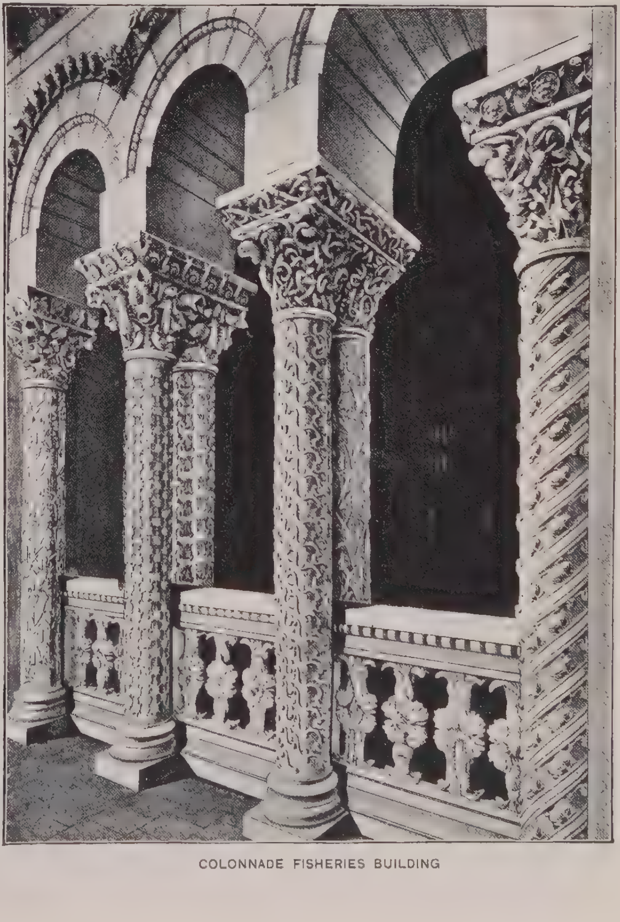
CHAPTER THE FIFTH

EXPOSITION MANAGEMENT, CONGRESS AUXILIARY, AND FINANCES



THE general management of the Fair was vested in the following organizations: First, the National Commission, whose powers were delegated to eight of its members, constituting, with a similar number selected from the local directory, the Board of Reference and Control. Second, the Chicago corporation styled the World's Columbian Exposition, organized under the laws of the state of Illinois, eight members of which formed a joint committee with the Board of Reference and Control. By this corporation were raised nearly all the funds, apart from the somewhat meagre appropriations of the national government, and by its committees were superintended the various departments of the work. Third, the Council of Administration, consisting of four members, two chosen from either section of the committee, and to which was later intrusted the main control, though for a time subject to the executive committees appointed by the national and local organizations. Fourth, the Board of Lady Managers, to which was assigned the supervision, not only of the Woman's building and its contents, but of whatever exhibits there were elsewhere of woman's work. Finally, a few weeks after the opening of the Fair, the executive control was vested in the director-general, seconded by the director of works, and under the instructions of the Council.

In the regulations prescribed for sessions of the board of directors were embodied many excellent features. First of all, order and decorum must be preserved; questions must be distinctly put; when rising from his seat, whether to speak or to deliver any documents to the board, a director must address himself, and that with due respect, to the president, must not proceed until recognized by that official, and then confine himself strictly to the question under debate, avoiding all personalities. Any member transgressing the rules of the board would be immediately called to order, must at once resume his seat, and rendered himself liable to the censure of the board. No director would be permitted to speak more than twice on the same question, except by permission of the board. When the president was putting a question or addressing the board, no one should be permitted to leave or walk across the room; nor during the delivery of a member's address should other members engage in conversation or pass between him and the chair. In these and other regulations of the directory are many suggestions which our state and national legislatures would do well to lay to heart.

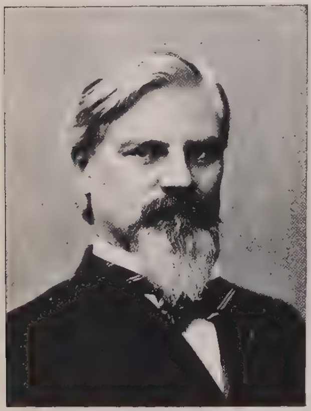


COLONNADE FISHERIES BUILDING

No less commendable were the provisions contained in the by-laws of the World's Columbian Exposition, the control of which corporation was vested in the board of directors. All officers of the company were to be elected yearly and by ballot at the first session of the board after the annual meeting of stockholders. To no member of the board, apart from its officers, was compensation to be granted in any form. Payments should be made only by checks, countersigned by the auditor, and upon vouchers certified by the chief of the department to which the item belonged, authorized by the board, examined and signed by the auditor, and approved by the president or vice-president. Apart from the outlay incurred by the bureau of construction, all payments for work or material exceeding $2,000 must be sanctioned by the appropriate committee, and sealed proposals invited by advertisement in the manner usual in such cases. At all meetings of the board of directors the order of business should be: first, roll call; second, reading of the minutes of the previous meeting; third, the consideration of matter officially communicated to the board; fourth, the reports of its officers; fifth, reports of special committees; sixth, the reports of standing committees; seventh, unfinished or postponed business; eighth, new business. Finally, in this connection, comes the most sensible regulation of all, that "No member of the board shall occupy the floor in debate more than five minutes, except by unanimous consent." Thus we may understand how the directory, composed of men of rare executive ability, was enabled to dispose of the enormous load of business presented at its bi-monthly sessions.

THOMAS W. PALMER

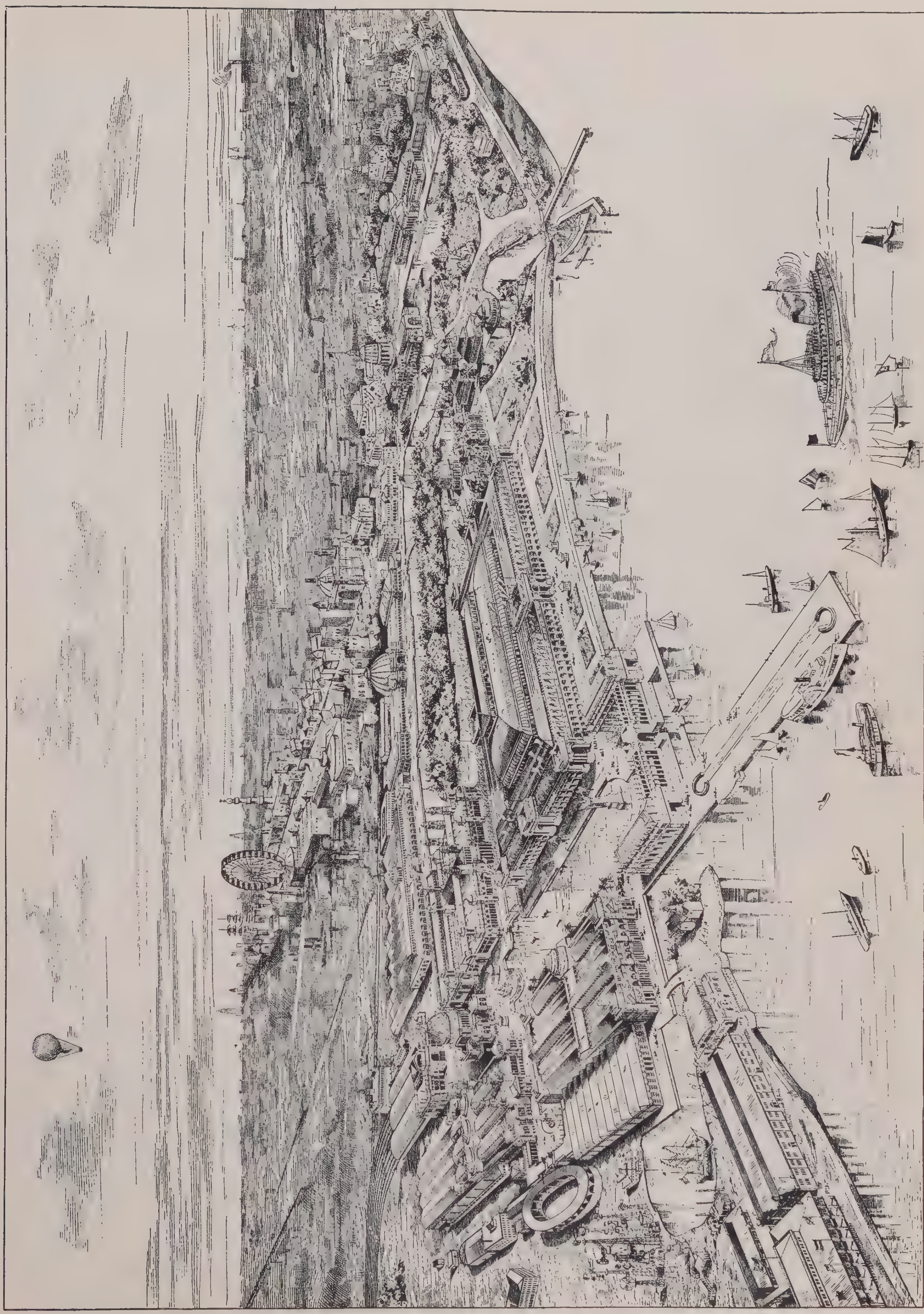
Among those who became identified with the management may be mentioned Lyman J. Gage, the former president of the local directory, one of the most prominent of Chicago's financiers. Of the director-general, George R. Davis, whose administration has been endorsed by the national and local boards, brief mention has already been made. Thomas W. Palmer, as president, and John T. Dickinson, as secretary of the National Commission, and Harlow N. Higinbotham, twice elected president of its local board, have all played well their several parts. To Thomas B. Bryan, formerly one of the vice-presidents of that board, and other of its members, as well as of the National Commission, no less credit is due. By Charles C. Bonney, as the head of the World's Congress Auxiliaries, presently to be described, correspondence was opened with the leaders of thought the world over; by G. Brown Goode of the Smithsonian Institution, was made a preliminary classification of the principal exhibits, and by F. A. Putnam, of the same institution, was organized the department of Ethnology; to Theodore Thomas was intrusted the direction of the orchestral, and to W. L. Tomlins of the choral branches of the musical department. To the chiefs of other divisions further allusion will be made elsewhere in this work; but here must specially be mentioned Mrs Potter Palmer, who with her able secretary, Mrs Susan Gale Cooke, has planned and controlled the complicated machinery of the Woman's department.


GEORGE R. DAVIS

The Board of Lady Managers is a feature of the administration. While at the Centennial and other expositions the management received valuable assistance from committees of women, creating at the former a special woman's department, this is the first occasion in the annals of our great world's fairs where women have taken a prominent part in the control. Authorized, as we have seen, by act of Congress, and vested by the National Commission with such powers as to render its members coördinate officers with those of either, the board has exercised a dual function; first, in promoting the special interests of women, and second, in enlisting a world-wide sympathy with the movement which it was intended to inaugurate. As stated by the managers themselves, its main purposes were to secure a complete presentation in the principal Exposition buildings of the best results then being accomplished by women in every branch of industry, science, and art; to secure data as to women's exhibits in the various departments, so as to afford a comprehensive idea of the proportion of the world's work performed by the sex, together with its variety, quality, and commercial value; to receive applications for exhibiting space from women and from manufacturers representing woman's work, and to see that proper locations were assigned to such exhibits; to appoint the proportion of jurors to which the board was entitled in all the departments to which women were contributors, and to forward by all possible means the interests of women at the Exposition.

JOHN T. DICKINSON

When the Board of Lady Managers was first organized for active work, under the presidency of Mrs Potter Palmer, it was found that the plan adopted at the Centennial Exposition of placing the contributions of women in a woman's department, sequestered from the general exhibits, would not answer for the occasion. By those who would furnish the most creditable of these contributions it was insisted that they should so be placed as to challenge competition with the best of classified products, apart from distinction of sex. Premiums should be assigned only for the best in each class of articles, giving to



BIRD'S-EYE VIEW WORLD'S COLUMBIAN EXPOSITION them additional value and perchance a world-wide repute; but in a competition solely of women's work, awards would be made for inferior products—inferior, that is, from a general competition point of view, thus detracting from the value of prizes for the more finished grades. Moreover, a large percentage of the world's industrial products, especially in the line of manufactures, results from the joint labor of men and women, so that none can distinguish the work accomplished by either. To exhibit merely what woman alone has accomplished would, as the managers stated, "Result in so meagre and unjust a representation of their usefulness as to do them great discredit." Nevertheless in the Woman's building are to be found some of the most interesting features of the Fair, some of the noblest inspirations of woman's genius. Of these I shall have occasion to speak in connection with the principal exhibits.

MRS POTTER PALMER

As to the ulterior objects of the Board, it was, as they remarked, "One of the cherished ideals to remove the present erroneous and injurious impression that women are doing little skilled labor, or little steady and valuable work, and that they consequently are not to be taken seriously into consideration when dealing with industrial problems; that they never learn to do anything thoroughly well, and that therefore the small compensation given them is a just and proper equivalent for their services, because they have no abstract commercial value. An effort would be made to demonstrate that their labor is a fixed and permanent element, and an important factor in the industrial world, and must be carefully studied in its relation to the general whole. Upon a strong presentation of the facts it was hoped that a healthy public sentiment might be created which would condemn the disproportionate wages paid men and women for equal services. The Board particularly wished to call attention to the necessity of providing technical training to fit women to occupy superior positions, and to elevate them above the plane of drudgery which they still occupy in many industries. Special interest would be felt in all technical schools in which designing, pattern-making, and applied art were taught, as well as those which looked to better and more economical methods in housekeeping, cooking, sanitation, and all that tends to increase the comfort and attractiveness of even the simplest homes."

MRS SUSAN G COOKE

With these ends in view the coöperation was invited of women and associations of women in every quarter of the world, especially those engaged in rare and interesting kinds of work. Foreign committees, acting in conjunction with the Board, were requested to make applications for space, such as would insure a proper representation of all the branches of industry to which the women of their country contributed. Excellent suggestions were forwarded by official circular to lady managers in the various states as to the organization of state boards, with their sphere and mode of action, especially as to the raising of funds. Commissions of women acting in unison with the Chicago board were asked to recommend for exhibition articles of unusual excellence produced by female hands; but no inferior specimens would be admitted from sentimental or other motives. To women's organizations throughout the United States "for the promotion of charitable, philanthropic, intellectual, sanitary, hygienic, industrial, or social and moral reform movements" circulars were addressed soliciting information to be used in a catalogue of such organizations. Together with data collected from every country in the world, this information was to be published in encyclopedic form, including, as the managers promised, the fullest record of woman's work, and of the good accomplished by women, that had ever been presented to the public, the volumes to be distributed gratuitously or at a nominal price in the Woman's building. All these and a thousand other matters received the careful and intelligent consideration of the Board of Lady Managers. As to enterprise, forethought, and executive ability their administration compared favorably with that of any department in the Exposition.

C. C. BONNEY

As to the reception accorded in foreign lands to the invitation of the Board of Lady Managers, it may first of all be stated that never before in the history of the world's international expositions has so much interest been taken in a display of woman's work. In many European countries committees were organized, including some of the most able and distinguished women; societies were formed to promote the interests of women in various branches of industry, and circulars were widely distributed explaining the purposes of the Board. Not alone from Europe came the foreign participants in this department, but from Mexico, Japan and elsewhere were forwarded applications for space, the empress of the latter country supplying from her own purse the means for an elaborate display.

The president of the English committee was Princess Christian of Schleswig-Holstein, third daughter of the queen, and among the members the duchess of Salisbury, the countess of Aberdeen, the baroness Burdett-Coutts, and Lady Churchill. Germany was represented by Princess Friederich Carl, of Prussia; France by Madame Carnot; Russia by her empress; Italy, Belgium, and Holland by their respective queens, and thus to royal and other personages throughout the world spread the current of enthusiasm. By the English committee application was made and granted for sufficient space in the Woman's building to permit a complete representation of the hospital department of the Royal British Nurse's Association. By the baroness Burdett-Coutts, as its president, was personally superintended the arrangement of the philanthropic section of the English women's display. In Prussia the best specimens of woman's work, with statistics of woman's progress were most carefully collected. From Berlin came word that all women's associations for charity, industry, and art would be represented in the German commission. All these and a score of other instances attested the world-wide interest aroused by the Board of Lady Managers.

Nor did the Board forget to provide for the less fortunate of their sex who visited the Fair by thousands —the workwomen of the United States, many of whom, after contributing their skilled labor to some of the most interesting of the exhibits, possessed but the scantiest of means for a trip to the great Exposition. For this purpose was organized the Woman's Dormitory Association, with a capital of $150,000, in shares of $10 each, such shares to be received in payment for accommodations to be furnished in buildings adjacent to the grounds. Thus, at a cost of some forty cents a day, the holders of single shares were provided with comfortable rooms under matronly care. When vacancies occurred this privilege was extended to women who were not among the stockholders, but at slightly higher rates.

PALACE OF FINE ARTS

For the care of children, special provision in the form of a children's home was made by the Board of Lady Managers, who took on themselves this necessary branch of the Exposition, since by the board of directors no plans were formulated, and no funds provided for the purpose. A site was granted adjacent to the Woman's building, on condition that money for a suitable edifice was secured within sixty days. This was raised, though with considerable difficulty, largely among mothers and educators in all portions of the United States, and in part among the children themselves, every child or children's club that subscribed even a single dollar receiving as a souvenir of the Fair a printed certificate stamped with the gold seal of the board. For the benefit of this most worthy enterprise a bazaar, of itself a miniature fair, was held in December, 1892, at the Chicago residence of Mrs Potter Palmer, and thus thousands of dollars were added to the fund. Of the building and its contents, which formed in truth a most interesting exhibit, a description will be given in connection with that of the Woman's department. Suffice it here to say that the main purpose of the home was to provide for children the best of care and attention, while permitting their mothers or guardians to enjoy at will all the attractions of the place. But here was no repetition of such piteous spectacles as occurred in Paris during the Exposition of 1889, when more than three thousand infants were abandoned to the tender mercies of the créché. At Chicago the créché was merely an adjunct of the home, where children not less than one year old might be left under charge of trained and skillful nurses, with ample provision for all their wants. For the little ones were furnished amusements suited to their age, and for their mothers brief lectures and simple practical illustrations of the best methods of educating and looking to the physical welfare of our future men and women.

W. A. SMITH

E. E. JAYCOX

In connection with the management may here be mentioned the World's Congress Auxiliary, an adjunct duly authorized by the government and the Exposition authorities. Its purpose was to hold, during the term of the Fair, a series of conventions attended by the foremost men and women in every department of progress. As a supplement to the material display it was intended, as stated in the preliminary announcement, that "The wonderful achievements of the new age, in science, literature, education, government, jurisprudence, morals, charity, religion, and other departments of human activity, should also be conspicuously displayed as the most effective means of increasing the fraternity, progress, prosperity, and peace of mankind." In a word, it was proposed to lay before the world the most important results attained in the several departments of civilized life, voiced by the ablest living representatives whose attendance could be procured. And what is more, it was decided to publish the proceedings of the several conventions as a lasting memorial of the Exposition. It was a somewhat ambitious programme, but one that received the endorsement and coöperation of some of the foremost men and women in every sphere of human thought.

M. H. DE YOUNG

By the directory, in conjunction with the Art Institute of Chicago, a Memorial Art palace was erected, as I have said, on the shore of the lake, for the permanent occupation of the Institute, but first to be used by the Congress Auxiliary, with an auditorium for the larger conventions and smaller apartments for the divisions, committees, and councils. Not least among the objects to be attained was the establishment of friendly relations among the intellectual leaders of the world, men for the most part known to each other only through the interchange of correspondence or of publications. It was also hoped to further the main objects of the Fair by aiding to form a brotherhood of the nations, and by banding the civilized peoples of the earth for the furtherance of the nobler aims of society.

J. HIRST

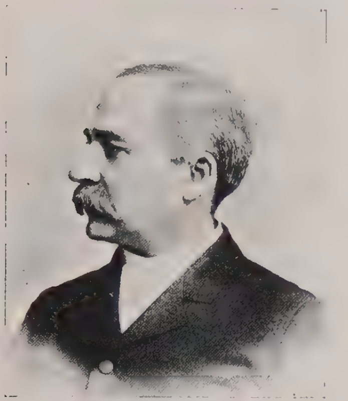
As to the scope and character of the conferences, the following extract from their general programme issued in October, 1892, will serve as an indication: "The government of the United States, recognizing the World's Congress Auxiliary as the proper agency to conduct a series of international congresses in connection with the World's Columbian Exposition of 1893, has directed the diplomatic and consular officers of the United States in all countries to request that a convenient number of the most eminent representatives of the various departments of human progress be selected as delegates to attend the respective congresses, by or under the direction of the government to which they are respectively accredited, in addition to those who will come as the representatives of the leading institutions and societies of different countries; and to extend the assurance that the largest practicable participation of foreign peoples and governments in the whole series of the congresses is especially desired; and that such coöperation on the part of other governments, will, it is confidently believed, tend in the highest degree to promote, strengthen, and extend those fraternal relations and mutual benefits which may now justly be regarded as the supreme objects of international intercourse, and as involving a higher civilization and a broader human progress."

EDWIN WILLITS

J. P. BARRETT

By the central organization of the congresses themselves similar but more cordial invitations, couched in less pretentious phrase, were addressed to societies and individuals, the former being requested to appoint not only delegates but committees of coöperation, and by all other means within their power contribute to the success of the conferences. For, as they stated, and that in no vein of self-conceit, "However great may be the honor and advantage which any nation will derive from a participation in the magnificent material exhibit already assured, it is not too much to say that a higher glory and more lasting benefits may be secured by sending its eminent men and women to take part in the world's congresses of 1893."

The congresses were divided into two main classes or series, termed general and special, the former presenting for consideration, somewhat after the fashion of popular lectures, and in suitable shape for extensive publication, topics in connection with the progress and problems of ancient and modern civilization. By the special conferences was to be considered a large variety of subjects, mentioned elsewhere in this chapter, among the more interesting being those in connection with scientific and religious associations, including the department of Sunday rest, by which the question was to be treated not only in its religious aspect, but in its physiological, economical, social, and ethical relations.


J. M. SAMUELS

Certain it is that if thorough organization is an element of success, that element is not found lacking in the World's Congress Auxiliary. In its seventeen departments there are no less than a hundred divisions, in all of which conventions are to be held, each division with its committee of arrangements, and each committee with its advisory council, the members of which are selected from every quarter of the world, and from those accepted as authorities on the subject to be presented for consideration. There is also a woman's branch, consisting of committees of women, who will meet in conference with those of the other sex whenever it may be deemed expedient.

The following are among subjects to be brought before the various departments: On the 15th of May, 1893, the first congress would open with an exposition of woman's progress, embracing all the spheres in which women have achieved success, and to include a general congress of representative women gathered from all civilized countries. Later would be held congresses in connection with the public press, and with medicine and surgery. For June the chosen themes were temperance, moral and social reform, and commerce and finance; for July, music, literature and education; for August, engineering, art and architecture, government, science and philosophy, and a general department of subjects specially assigned. The September congresses would be devoted to the labor question and to religious topics, including missions and church societies; those of October to matters concerning public health, Sunday rest, and agriculture.

L. W. ROBINSON

The scope of the several departments was sufficiently comprehensive, including in each subject a number of subdivisions and kindred branches, either suggested or assigned. Taking, for instance, the department of literature, whose congresses were to open on the 10th of July, we find among its general divisions history, philology, authors, libraries, folk-lore, and copyright, while by one of the committees was to be considered "the practicability of a common language for use in the commercial relations of the civilized world." By the president of the Auxiliary the following were suggested among others as appropriate themes for consideration: The influence of literature, the unities of language and literature; the condition and future of historical literature; the methods of historic research; the collection, arrangement, and management of libraries; the common interests of authors, and the protection of literary property.

Not the least interesting feature in the department of literature is the folk-lore congress, organized by an advisory council selected from the most eminent men in folk-lore science. Letters were addressed to folk-lore societies, inviting their coöperation, and to individuals appeals were made, asking their participation in a project to which had already been promised the support of some of the foremost literary and scientific men. The subjects were arranged in the following chapters: I. Myths and traditional beliefs. II. Oral literature and folk-music. III. Customs, institutions, and ritual. IV. Artistic, emblematic, and economic folk-lore. Each chapter was divided into sections, and among the subjects included in the first were the origin of myths, the philosophy and faculty of myth-making, the survival of myths in history, nature myths, hero myths, and animal myths. Under the second heading were presented the relation of Indian, Negro, Mexican, and other native American legends to European legends; dialects, popular slang and argot, with their effect on language; folk rhyme and rhymed literature; the historical value of popular songs; and the bibliography of folk-lore. In the third division were contained a history of customs and institutions; the effect of particular customs on national character; Indian ceremonies; Voudou rites; totemism, castes, clan organization, and tribal relations. In the fourth chapter, the subjects of which were illustrated by ethnographic and archæological collections, were divinities and cults; fetiches and amulets; emblems of command and servitude, of peace and war; and among those relating to superstitions and beliefs were witch-pins and instruments of torture, with iconographic representations of popular fanaticism.

F. J. V. SKIFF

Thus it will be seen that the folk-lore congress by no means accepted as the scope of that science the definition of Dean French, who describes it as "The tales, legends, or superstitions long current among the people." In the list of subjects here presented is only a small portion of those suggested in the preliminary announcement of the congress, and yet in that announcement it was stated that the hundred or more questions there submitted formed but the barest outline of the work. In other departments the programme was no less comprehensive. Take for instance that of government; as the general divisions we have jurisprudence and law reform; political and economic reform; city government; executive administration; intellectual property, and arbitration and peace. In the second of these were included political economy and economic science; social science; the single tax and other theories; public revenues; coinage; weights and measures; postal service; civil service reform; and the suffrage in republics, kingdoms, and empires.

In the section devoted to education all its leading branches were embraced, from a university training to that of a kindergarten, with manual and art training, commercial and legal training, domestic and economic training, physical culture, and the instruction of the deaf and blind. At the close of the several congresses was to be held the World's General Educational Congress, at which all the departments of education would be suitably represented. In connection with the department of religion was to be convened, for the first time in the history of the world, an œcumenical council, at which would be present many of the leading representatives of the world's historic faiths. "If," say the committee in its first report, "not only catholics and protestants, Jews and representatives of the Greek church, but Buddhists, Brahmins, Confucians, Parsees, and Mohammedans shall sit together in frank and friendly conference over the great things of our common spiritual and moral life, this one fact will impart to the Columbian Exposition a great celebrity and importance."

F. W. PUTNAM

W. J. BUCHANAN

A. F. SEEBERGER

The meetings of all the congresses were to be open to the public, for whose accommodation there would be two main audience rooms and a score at least of smaller ones, each of the former, where were to be discussed subjects of more general interest, being so arranged as to afford seats for about 3,000 persons. But discussion, in the broader sense of the term, would constitute no part of the programme formulated by this series of congresses; for, as their president remarked, "Unprepared discussion or miscellaneous debate would obviously be inconsistent with a plan of which the chief object is to procure the maturest thought of the world on all the great questions of the age, in a form best adapted to universal publication."

J. W. COLLINS

How it was possible to do even scant justice to the endless multiplicity of subjects proposed by the various departments, and that without jar or repetition, is the problem that will first of all present itself to the reader; for there is hardly a branch of human knowledge, whether in science, art, or literature, in industrial pursuits, in commerce or finance, in government, in education, in religion or philosophy, that is not here represented. From the most abstruse of scientific, philosophical, and political questions, to topics in relation to temperance and vegetarian societies, nothing is omitted in the scope of these world-embracing conferences, whose specific purpose, as briefly stated by themselves, is "to review the progress of mankind, and state the living problems now awaiting solution." But as with the Fair administration, so with the congresses, the members of both included not only men of culture but of wide experience and proved ability, men who possessed not only the faculty of planning, but the rarer faculty of organizing and carrying into effect.

Of one thing the visitor could rest assured on entering the chambers of these conferences, and that is that he would not be bored. The themes were most carefully selected and arranged with a view to avoid iteration and prolixity, and at the same time to secure strength and as far as possible fulness of treatment. All lectures and discourses were strictly limited as to time; for, as stated in the general programme, "It would obviously be better, in a given hour, to have two or three compact papers from as many different leaders, than to give the time at command to one of them for a long discourse embracing several subjects." For the main object of the conferences, which were to

E. C. CULP

F. D. MILLET

state results and consider the more important and interesting of social, political, and industrial problems, lengthy addresses would be out of place. They rather resembled, in this respect, those delivered at the Sunset club of Chicago, whose postprandial discussions or talks, as they are termed, on subjects previously announced, are limited to twenty minutes for the leader, and eight minutes for each of those who follow.

MIDWAY PLAISANCE

The time remaining after each address was to be, at the discretion of the officer presiding, placed at the disposal of the most eminent among the participants at the several conferences. But, as the programme explained, "The summaries of progress to be presented, and the problems of the age to be stated in the World's Congresses of 1893, would not be submitted to the vote of those who might happen to be present, but would be offered for subsequent deliberate examination by the enlightened minds of all countries; for unrestricted discussion in the forum, the pulpit, and the public press, and finally for the impartial judgment of that exalted public opinion which expresses the consensus of such minds."

In truth it was a worthy enterprise in which they were engaged, and their invitations and announcements were cordially received in every quarter of the world. Just as the visitor to the Columbian Exposition sees there the highest forms of development in the arts and sciences, the manufactures and industries of the world, so at its congresses he listens to descriptions of the progress and results achieved in every department of civilized life, voiced by some of the foremost exponents in every sphere of human activity, investigation, and research. As to the proceedings of the various congresses, I shall have occasion to speak in a later section of this work.

AN ARABIAN ENCAMPMENT

By each department of the Exposition special regulations were framed, of which mention will be made in its place. Among the general rules prescribed by George R. Davis, the chief executive officer, with the sanction of the Board of Control, the following are worthy of note: The reception of exhibits would commence on the 1st of November, 1892, and would cease on the 10th of April, 1893, the limit of time for their admission being extended only some three weeks before the opening of the Fair, to the thirtieth of the latter month. Exhibitors would not be charged for space, but must defray the expense of transportation, handling, arrangement and removal. A limited amount of power would be furnished free of cost, any excess to be supplied at Exposition prices. Permits would be given to exhibitors, specifying the location and space allotted to each, such permits to be non-transferable; all exhibits to be limited to the articles specified in the application, and if intended to compete for awards it must be so stated. No dangerous or offensive articles, among which latter were included patent medicines, nostrums, and other empirical preparations, would be admitted. Exhibitors' cards and circulars, intended for distribution, must be kept within their space, the right being reserved to discontinue this privilege whenever it became annoying to visitors. The commissioners would not be responsible for damage or destruction of exhibits, though taking all reasonable precautions for their safety. No articles could be sold for removal before the close of the Fair, except by special concession or privilege granted by the committee on ways and means; but after the closing day, October 30, 1893, all exhibits should be removed as soon as possible, goods remaining on hand at the opening of the following year to be at the disposal of the management.

As to state buildings, the regulations required that they should be tasteful in design, in harmony with their surroundings, and that their plans should be subject to the approval of the director-general and the chief of construction. Two or more states or territories might share a single building, and, under the control of the state board, but subject to the general rules prescribed for the Exposition; all such buildings were to be used as headquarters, and for the convenience and entertainment of visitors from the section of country which they represented. All exhibits intended to compete for prizes should be placed in the main buildings and grouped according to the official classification, except such as in the opinion of the director-general could only be displayed to advantage in the grounds.

Of foreign commissioners it was required, among other provisions, that before the 1st of November 1892 they should forward to the director-general plans displaying the method of distributing the space assigned to them, with lists of exhibitors and other necessary information. Exhibits landed at original ports of entry would be allowed to go forward to the grounds under the supervision of customs officers without examination and duty free, except for articles intended for sale in the United States. If exhibits were intended to compete for medals or diplomas, it must so be stated by the exhibitors. The arrangement of all exhibits and decorations must conform with the general plan of the directorate. Foreign commissions, or such agents as they might designate, would be held responsible for the reception and removal of goods; and should no authorized person be present to receive them, they would at once be placed in storage at the risk and expense of whomsoever it might concern.

The arrangements made by the several departments for the accommodation and protection of exhibitors left nothing to be desired. For a year or more the Traffic department, of which Elbert E. Jaycox was appointed manager, was in communication, directly or indirectly, with at least one thousand railroad companies, and with the hundreds of steamship companies whose vessels ply on American waters, with a view to secure the most favorable rates for transportation and travel. After much tedious negotiation, though in a measure simplified by the traffic associations through which business was conducted with the principal railroad systems, a general arrangement was made for the return of exhibits free of cost on condition that full rates were paid for their carriage to Chicago, and that meanwhile their ownership remained unchanged. With many of the minor roads, from which no large business in this direction could be expected, more favorable terms were made. By South American railway and steamship companies, liberal reductions were granted in their freight and passenger schedules. With transoceanic steamship lines, and with coast, lake, and other transportation companies, a general rate was established of $2.50 a ton, all of them showing a disposition to meet the wishes of the management.

By some of the railroad systems of the United States a reduction was made of from a fifth to a third on their regular passenger fares, with return tickets available for two or more months from the 1st of May; but in this respect the railroad corporations were less liberal than in their rates on transportation, some of them making only slight concessions, and others none at all. By several of these companies it was urged that there was no good reason why railroad charges should be reduced, while there would be no reduction, but rather an advance in those of hotels and boarding houses, especially as under their usual tariff they would have all the traffic they could handle. On the other hand, to put the matter on no higher grounds, it is certain that a moderate concession would have been more than compensated by increase in the volume of travel, not only to and from Chicago, but between other points of attraction. As to inability to handle this traffic, the fact that many months before the opening of the Exposition a single firm was manufacturing cars at the rate of seventy-five a day, does not point in that direction. At the London exhibition of 1851 passengers were carried to and from north of England cities, a distance of 500 to 600 miles, at the rate of a quarter of a cent a mile, even that rate yielding, it was said, a not inconsiderable profit. As a result, although Asiatic cholera prevailed at the time, the attendance was larger than at the Paris Exposition held four years later, almost as large as the London Exposition of 1861, both of them far superior in spectacular and artistic display, and though open for the smallest number of days, was, from a financial point of view, the most successful of all the great world's fairs.

As to the charges of the transportation department itself, for the reception and handling of exhibits on the Exposition grounds, a rate was announced in January 1893 of six cents for 100 pounds, with a minimum of fifty cents for single packages, and an extra rate for exhibits exceeding fifteen tons in weight, arrangements for the reception of the latter to be made in advance with the managers. Similar charges must be paid on the removal of exhibits, but in neither case did such charges apply to those of states and territories or of foreign powers whose exhibits would be in charge of officials appointed by themselves. Finally, no duty would be exacted on foreign exhibits, except for those that might be sold within the limits of the United States, in which case they would be subject to the regular customs dues.

Of the facilities for reaching the city of the Fair, and for making the tour of that city, brief mention has already been made; and assuredly there could be no cause of complaint in this connection. At the

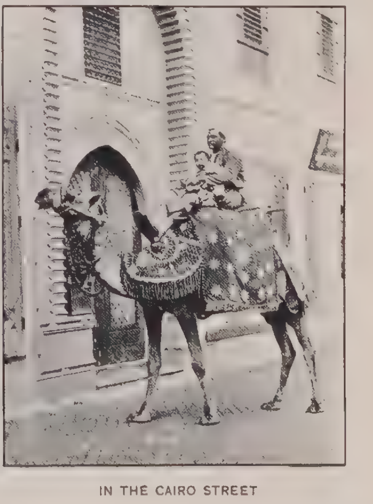
Paris Exposition of 1889 the daily attendance was on an average more than 137,000, and on the closing day reached what was then the unprecedented total of 400,000 visitors. But Chicago proposed to handle, if necessary, a passenger traffic of 100,000 an hour; nor was this an idle boast when we consider her railroad and street-car system, together with the lake steamers utilized for the purposes of the Fair.

In other departments, whether pertaining to the Exposition proper or to the thousand ramifications connected therewith, there has been such thorough organization and such close attention to detail that, as it would seem, only one of three contingencies could stand in the way of success. These were an outbreak of Asiatic cholera, a railroad strike, and a conflagration. On the two first it is not my purpose further to remark; but as to the last it may be stated that all possible precautions were taken. In the autumn of 1892 a committee of insurance men was appointed to make a careful inspection of the fire department, and this is what they reported: There was first of all a strong and reliable corps of firemen, drilled up to the highest standard of efficiency, equipped with the best appliances, well distributed throughout the grounds, and with a force on duty by day and night. There were fire buckets by the thousand; there were Babcock extinguishers without number; chemical engines by the score, with hose lines reaching to the top of the tallest structure, and with a water supply of more than 64,000,000 gallons a day; there was a fire-boat in the grand canal, with powerful pumps and half a mile of hose, ready for instant service. Finally there was an excellent system of electric signals, with fire alarm boxes at all necessary points, and with men always ready and able to work them. With such precautions it is no wonder that the amount of insurance carried on the buildings during the construction period did not exceed two or three millions; but this was largely increased when the temples of industry were completed and filled with their precious contents.

MIDWAY PLAISANCE, CAIRO

For the safety of the public, both as to person and property, due precautions were also taken. For special duty at the Fair there was a large and well disciplined force of police, and to act in conjunction with them and with the fire department was organized the Columbian guard, mustering during the Fair from 2,000 to 2,500 men, under command of Colonel Edmund Rice, a Gettysburg veteran of the 19th Massachusetts volunteers. The Guard was divided into companies conveniently distributed through the grounds, two on patrol duty, one at each of the gates, one or more at each of the various buildings, one for secret service or detective duty, and with a strong service always held in hand for emergencies. In the use of appliances for suppressing fires they were so thoroughly drilled and so on the alert that only once between June and December of 1892, on an October day, when the dome of the Machinery hall was threatened with destruction, were the services of the regular fire department required. Meanwhile they extinguished countless incipient fires, such as were almost inevitable where as many as 12,000 men were employed at a time, and in so doing more than once saved the city of the Fair from a Chicago conflagration.

To the guards is intrusted the safe keeping of everything on the grounds, whether in the shape of buildings, exhibits, or other public or personal property, and as they were guardians of the place during the construction period, when accidents were of frequent occurrence, so to their care and protection is committed the army of visitors during the term of the Fair. In case of need patrol wagons can be had at a moment's notice; thieves and disorderly characters are promptly given into custody, and in the event of more serious trouble a strong force can be at once despatched from headquarters, with which there is instant communication from every quarter of the grounds. If required thus to act, the men are expected to restore order merely by force of numbers, no weapon being carried except a small sword, and that more for ornament than


IN THE CAIRO STREET

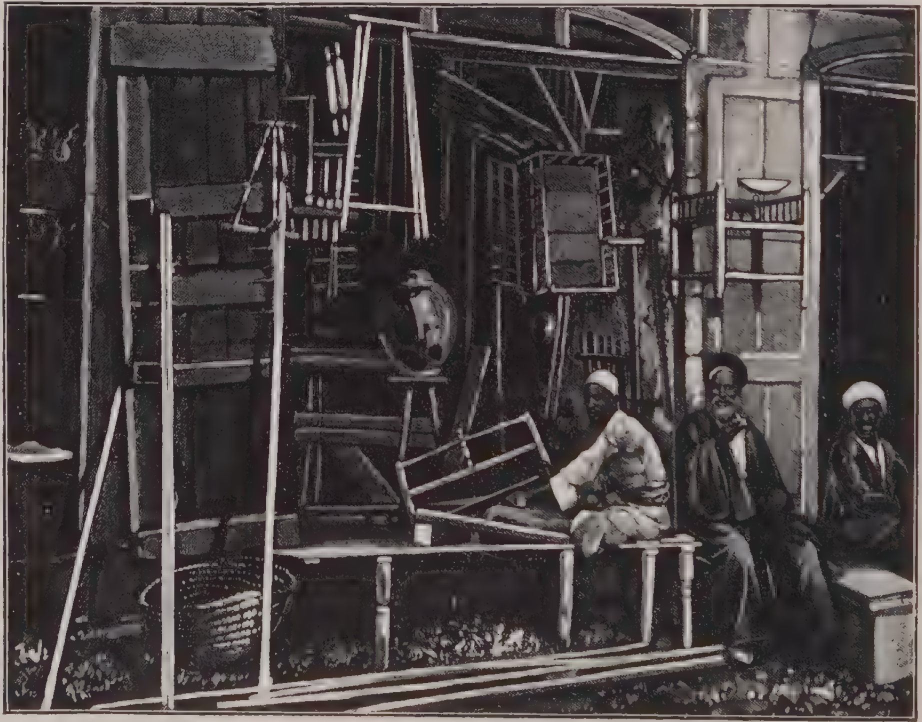
LABYRINTH, MOORISH PALACE

DANCING GIRL, ALGERIA

use. For their appearance, discipline, intelligence, and zeal, the Columbian guards are among the interesting features, and never perhaps was organized for such a purpose a more efficient body of men. All were subjected to a critical test before being appointed, and were required to furnish proof of good character, ability, and habits. They must be at least five feet eight inches in height, of good physique, and not less than twenty-one nor more than thirty-five years of age. Many of them had served in the ranks of the army, and not a few in the navy; there are ex-army and ex-police officers, men from every state in the Union and from a score of foreign nations, college graduates and linguists who converse in a dozen different tongues, all selected as the best among many thousand applicants, all of them competent, thoroughly equipped, and kept ever on the alert by a constant system of drill and inspection.

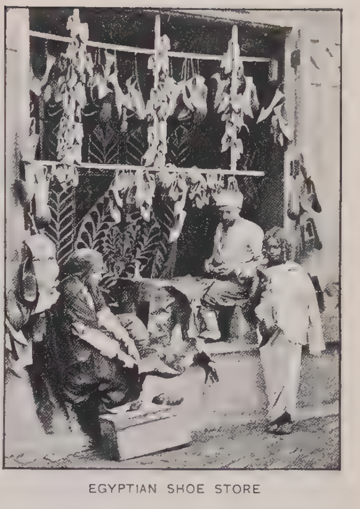
For the headquarters of the police, the Columbian guards, and the Fire department, together with those of the chief of construction, an edifice called the Service building was erected between the Woman's building and the Horticultural hall. Here also is the hospital, in charge of Dr John E. Owens, its medical director, and with the most complete of modern appointments. Here were treated, during the construction period, from 200 to 300 patients, most of them suffering from the effects of injuries caused not from any lack of precautions, but by the fact that the men were not accustomed to work on structures of such vast proportions. In the Woman's building is another so-called model hospital, a term by no means inappropriate, for both as to service and equipments, everything of the best has been provided, with physicians and trained nurses, and with arrangements so perfect that this is of itself in the nature of an exhibit. In a room devoted to the purpose are couches and hospital beds for such cases of sudden indisposition or accident as do not require serious treatment. Hither come or are conveyed those afflicted with sudden faintness or hysteria, and here the aged or infirm may find a resting place at any hour of the day.

A feature of the Fair is the five acres of dining and refreshment rooms, for such is the floor space set apart for these important adjuncts. There are twenty-seven restaurants and cafés, with one hundred and fifteen dining-rooms, with tables set forth from kitchens as complete as those of a hotel, with seats for 8,000 persons, and with more than 1,000 waiters and cooks. They are well distributed throughout the grounds, the best being that of the Administration building, near the common terminus of the several railroad lines by which the place is approached. There are many smaller restaurants, for the most part in



ARABIAN CARPENTER SHOP

MOORISH BARBER SHOP



EGYPTIAN SHOE STORE

connection with state and foreign buildings; there are lunch counters, each having some specialty, and in the Dairy building is a luncheon room where articles of food prepared from the choicest products of the dairy are set before the visitors. In a word the pilgrim to the great show can find within its gates such diet as suits his palate and purse. By those to whom concessions are granted for such purposes, a percentage of the receipts, usually a quarter, was made payable to the management, thus furnishing a considerable source of revenue.

In this connection a word may be said as to newspaper and other unfounded reports of extortion to which visitors would be subjected at the Fair. Doubtless there was many a scheme for fleecing the unwary; but he who permitted himself to be fleeced had only himself to blame. By the Bureau of public comfort under charge of W. Marsh Carson, a systematic canvass was made of the city with a view to provide at moderate rates the best possible accommodation for the expected army of sightseers. As the result rooms were secured for many thousands of persons in some of the best residence sections of the city at an average daily rate of $1.35 for each person, such rooms to be at the disposal of those who engage them directly at the bureau. This rate did not, of course, apply to first class hotels or to the more expensive buildings erected in the neighborhood of Jackson park. On the other hand accommodations could be had in less fashionable suburbs at lower prices, and by visitors who preferred the seclusion and economy of private rooms there was no difficulty in finding quarters to suit their taste.

The financial affairs of the Exposition are conducted by some of the ablest of Chicago's business men, and with consummate ability. When first the project of a world's fair began to take shape, the outlay was estimated at $5,000,000, or much below that of Philadelphia of 1876 and the Paris Exposition of 1889. But, in keeping with their world-wide reputation for enterprise, the people of Chicago would brook no unseemly stint or false economy. Before the buildings were completed it was known that the affair would cost nearly twice as much as any exhibition which had been held in the history of the world. Its grounds were to occupy nearly four times as many acres, and its area under roof was to be twice as great as at any former exhibition, while at no other was there so large a proportion of foreign participants.

Before the passage in April 1890 of the act of congress authorizing the enterprise funds were procured, as we have seen, to the amount of $10,000,000, of which one-half was voted in bonds by the city council of Chicago, and the other half, later increased by nearly another million, through subscriptions to the capital stock. By the sale of debenture bonds was realized $4,000,000; by the United States was appropriated under the provisions of the act, $1,500,000 for its own building and exhibit, together with incidental expenses and labor, and without including such

TURK

ALGERIAN DONKEY

TURKISH HOUSE

premiums, $2,500,000 in the shape of 5,000,000 souvenir coins, from the sale of which it was expected that an equal amount would be secured in premiums, making in all a total of $19,000,000. The cost of construction and operation, including all expenses until the closing day, were estimated at $21,250,000, leaving a deficit of only $2,250,000, without taking into account any of the sources of income. As to the estimates of that income formed by the management, a comparison may later be made with the actual results.

In connection with the financial aspect, it may here be mentioned that, as the opening day drew nigh, reports were circulated that the enterprise was bankrupt. So far from being in such a strait, it was officially stated that in February 1893 the management had in bank a balance of $2,500,000, with more than another million in unsold bonds, and that at no time had the balance to its credit been less than $1,500,000. Nevertheless, to meet the expenditure still to be incurred, congress had been asked to advance as a loan $5,000,000, to be repaid from the income. Considering that Chicago had already advanced nearly $11,000,000, and that conservative estimates placed the receipts from all sources at about $4,000,000 above the total outlay, the application was by no means unreasonable. Moreover, it should be remembered that many millions had been expended, and that many more were yet to be expended by the people of our own and foreign lands, either as participants or visitors, and that the enterprise would largely increase the sale of American goods in existing markets, and open to them new markets in every quarter of the world.

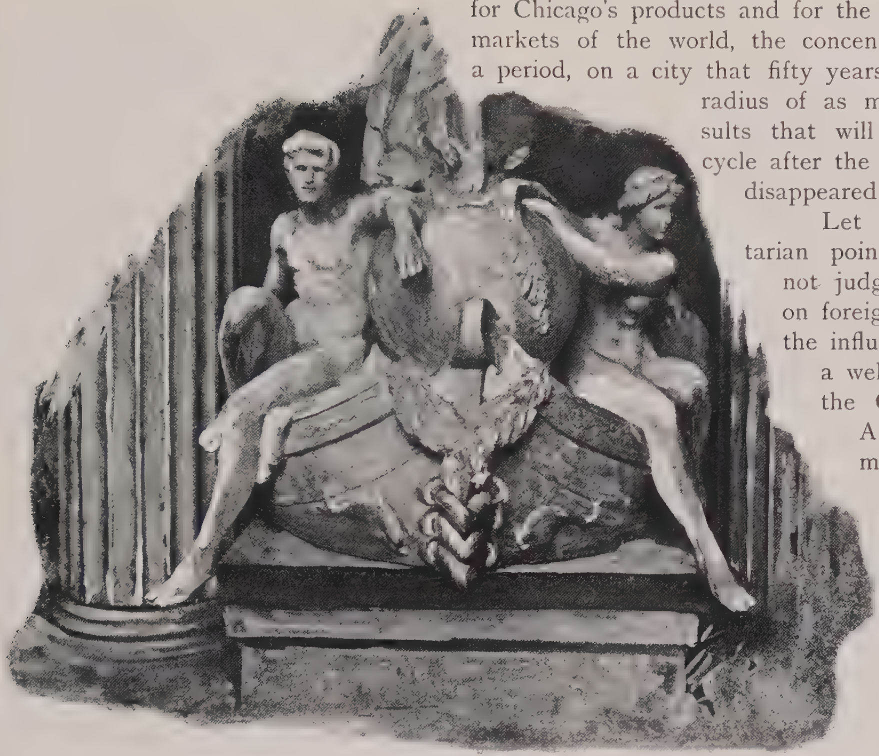
ALASKAN VILLAGE

By the states and territories of this republic, and by foreign nations, including local and individual subscriptions, it is probable that not less than $13,000,000 was added to the amount expended on the proposition, making a total outlay of some $32,000,000 before its opening day. Never before, even at the Paris Exposition of 1889, were foreign contributions so numerous and on so liberal a scale, more than fifty foreign nations and colonies being represented, and with appropriations ranging from $800,000 for that of Germany to $1,200, for the Danish West Indies.

SOUDANESE HUT

Looking at it merely from a financial point of view, all the vast sums expended on its buildings and exhibits, on the transportation, custody, and safe return of its myriads of groups, with other incidental expenses, formed but a small percentage of the aggregate to be disbursed by the visitors themselves. By these visitors large amounts would be distributed among the hotels, boarding-houses, restaurants, stores, theatres, transportation and other companies, and individuals that catered to the needs, amusements, and caprices of this gathering of the nations. Among these were not included the many thousands whose homes were within easy reach of Chicago, and by whom would be greatly increased the amount of this expenditure and the volume of attendance.

Finally, it may be remembered that, in expending thrice the sums devoted to any previous exposition, the management knew perfectly well what they were about. They merely cast upon the waters bread that would return to them before many days with tenfold its former bulk; for should the monetary affairs of the enterprise result in financial loss, the benefits that would accrue indirectly, not merely the number of dollars that would find their way into Chicago vaults, but the stimulus imparted to industries, the quickening of the pulse of commerce, the reputation acquired



IN GROUP ON PERISTYLE. PRATT

for Chicago's products and for the products of the great west in all the markets of the world, the concentration of interest, for however brief a period, on a city that fifty years ago was almost unknown beyond a radius of as many miles, here are some of the results that will remain and bear fruit for many a cycle after the last vestige of this great display has disappeared from the face of the earth.

Let us not judge merely from the utilitarian point of view, and most of all let us not judge solely in relation to the influence on foreign countries, but rather in relation to the influence on our own community. Says a well known writer, in considering what the Columbian Exposition would do for America: "Its national will be of far more vital importance than its international effect. What we chiefly wish to lay stress upon is its claim upon Americans as a very beautiful spectacle, and still more forcible, its claim upon Americans as a very instructive spectacle. It will delight their eyes as nothing else has done. It will teach them the nature and value of art as nothing else could do. And it will confirm and increase their faith in those democratic institutions which once more, in a new field, have proved themselves capable of a magnificent, an unrivalled achievement."

As to awards and medals, it was decided, after much discussion, that they should be distributed among every class of exhibits. By congressional act of April 1890 it was provided that the national commission should, among other functions, "appoint all judges and examiners for the Exposition and award all premiums, if any." At a later session of the national legislature $100,000 was appropriated for the casting of 50,000 bronze medals and for 50,000 diplomas, this but a small portion of the outlay to be incurred by the committee of awards. By many of the exhibitors protests were made against awards of any kind, some of them even threatening to withdraw their exhibits on the ground that they had everything to lose and nothing to gain by their goods being classed with those of inferior grade. This question determined, came the method of granting awards, whether by what were termed, in self-explanatory phrase, the single judge or the jury system, the latter the one adopted at former international exhibitions. The former provoked no little opposition, not only from exhibitors, but from the director-general and the chiefs of departments, whose tables were covered with written protests and offers to withdraw applications for exhibiting space. Especially were artists opposed to the single judge system, refusing to submit their work to the judgment of any single member of their profession. By the head of the Fine Arts department it was stated before the Board of Control that the adoption of this system would leave the galleries of the Art Palace almost bare of the choicest works of living artists. Finally it was determined to place all decisions in the hands of juries, competitors to state their intention to compete for prizes, a written report to be filed in each instance, stating why an award had been made or withheld, and with right of appeal to the executive committee, by whom a re-examination might be ordered. In the interests of American artists and of the Department of Fine Arts advisory committees and juries of selection were established in the principal art centres of Europe and the United States. Of the organization and functions of these committees mention will be made in connection with art exhibits.

As the question of opening the gates on Sundays was one which gave rise to much acrimonious discussion, it may here be stated that although they were opened, the work of employés was reduced to a minimum, and with none of the machinery or manufacturing and other processes in operation. Certain it is that nothing of a boisterous or demoralizing character is permitted on any day of the week, and least of all on the Sabbath. In answer to the countless petitions and protests that were forwarded to the management in this relation, it may be said that few employés are required to work on the Sabbath; that their task is for the most part merely nominal; that they are allowed some other week day of rest; that it requires no more attendants for a hundred thousand visitors to the Exposition than for a hundred thousand visitors at other and perhaps more questionable places of amusement; that the Fair is the most liberal of all educational agencies; finally that here can be read some of the noblest sermons preached since the great

Nazarene delivered from the Judean mount the most sublime discourse that ever fell from the lips of man or saint or angel.

Among the most attractive phases of the Exposition are the musical entertainments held in the Festival hall, a vast amphitheatre at the southern extremity of Jackson park, with accommodation for an audience of 10,000 or more. Grand choruses were carefully drilled for the purpose, and here are heard some of the finest military bands in the world, those of France, Germany, England, and other foreign nations, together with the choicest in the United States, taking part in a series of popular concerts such as have seldom been heard before. At the north end of the peristyle which spans the entrance to the lagoon is the Music hall intended for professionals and connoisseurs, where are frequent opportunities to listen to some of the foremost artists in the world, with programmes of the highest standard, such as rank with the most memorable performances in the history of vocal and instrumental art. Here is also the Recital hall for smaller concerts, and distributed throughout the grounds are music stands for the accommodation of the various bands, among others present being that of the garde du corps of Emperor William.

As announced by Theodore Thomas, the musical director of the Exposition, it was proposed by the bureau of music to group all illustrations and performances around two central ideas; first, "to make a complete showing to the world of musical progress in this country in all grades and departments from the lowest to the highest; second, to bring before the people of the United States a full illustration of music in its highest forms, as exemplified by the most enlightened nations of the world." By a commissioner despatched to Europe to invite the participation of distinguished composers, such favorable answers were received as permitted a succession of international concerts, where might be heard the best that each nation could produce. By the bureau itself invitations were forwarded to the principal choral societies throughout the country, where coöperation was requested, not only for their love of art, but for the opportunity thus to show to the world the artistic excellence already attained by our own musical organizations. Not the least interesting feature in this department are the bi-monthly concerts in the Woman's building, at which only female amateurs of the foremost rank are allowed to take part.

WORLD'S FAIR MISCELLANY.—The management of the World's Fair was partially modelled after that of the Paris Exposition of 1889. To gather details as to the operation of the latter, Edward T. Jeffery, a member of the Board of Reference and Control, was sent to the French capital with several assistants, and returned with a valuable report.

Among the vice-presidents of the Board of Lady Managers is one of the leading journalists of the southern states, who also manages a large and profitable sugar plantation.

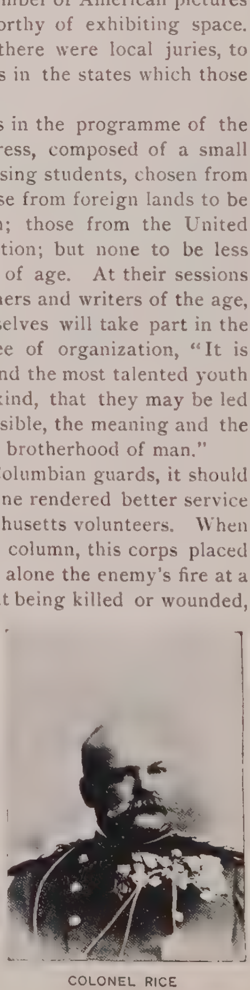
Although it is the policy of the management closely to restrict the sale of merchandise and even curiosities within the grounds, exhibits may be used as samples, from which orders may be filled elsewhere. While this will not be encouraged it cannot be prevented, for it is a matter over which the authorities have no control.

Many exhibits were delayed by the non-payment of charges from Chicago to Jackson park, the authorities refusing in all cases to advance such charges.

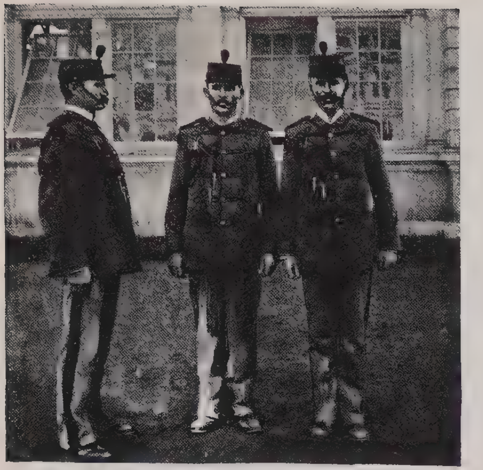
Early in March 1893 the jury on fine arts met in the building of the Art Institute to select from a large number of American pictures offered by intending exhibitors those worthy of exhibiting space. In New York, Philadelphia, and Boston there were local juries, to whom were submitted the works of artists in the states which those cities represented.

One of the most interesting features in the programme of the Congress Auxiliary is the Youth's Congress, composed of a small number of the brightest and most promising students, chosen from all the principal nations of the world; those from foreign lands to be selected by their ministers of education; those from the United States by state superintendents of education; but none to be less than thirteen nor more than twenty years of age. At their sessions will be present some of the foremost teachers and writers of the age, and it is intended that the students themselves will take part in the discussions. As stated by the committee of organization, "It is purposed to draw together the worthiest and the most talented youth of all lands, the coming leaders of mankind, that they may be led to realize, as could not otherwise be possible, the meaning and the worth of the fellowship of nations and the brotherhood of man."

Of Colonel Rice, commander of the Columbian guards, it should be said that on the field of Gettysburg none rendered better service than he and his men of the 19th Massachusetts volunteers. When the union lines were broken by Pickett's column, this corps placed itself in the gap, and for a time withstood alone the enemy's fire at a distance of fifteen paces, half the regiment being killed or wounded, and among the latter Colonel Rice, who fell in front of his regiment, with one foot on the body of a prostrate foe. Presently reënforcements arrived, and thus the day was saved. The Columbian guards may be recognized by their uniform of light blue, the tunic ornamented with rows of black braid, and the cap with crossed gun and sword after the fashion of Columbus' time. They are empowered to make arrests, offenders merely against the rules of the Exposition being expelled from the grounds, while those who transgress the laws of city or state are turned over to the police.



COLONEL RICE


COLUMBIAN GUARD AND GUIDE

ROLLER CHAIR

To the police force of Chicago large and necessary additions were made for the occasion. By the chief of police it was stated in December 1892 that no city in the world had, in relation to size and local conditions, so small a body of police as Chicago. But if small in number they were efficient, as was shown during the several days of the dedication ceremonies, when crowds were handled with care and discretion, and criminals so carefully watched that few cases of robbery occurred.

Opposite the Fisheries building, and on the other side of the water-way, is the life-saving station, a necessary adjunct, when it is considered that the lagoons and canals are crowded with hundreds of craft, many of them of the frailest description. To provide against serious accidents through the collision or capsizing of boats every precaution was taken, the station being in charge of the government and well manned and equipped.

Adjacent to the grounds is an encampment of the National guard, where are contingents from many of the states and territories. It was at one time proposed to hold a camp of instruction, at which 50,000 men would be present; but though an imposing feature, it was rejected on the grounds of expense, the difficulty of finding suitable and sufficient space for manœuvring, and of instructing and handling such a force so as to make their manœuvres effective.

With railway companies arrangements were made whereby excursion trains, by whatever road they might reach Chicago, would run to the grounds without transfer of passengers.

There are in Chicago nearly 1,400 hotels of every size and grade, with spare room sufficient for at least 150,000 extra guests; this in addition to innumerable boarding and private houses where quarters may be had. Of restaurants and cafés there are also about 1,000, whose capabilities are almost unlimited. For a single hotel project nearly $200,000 was collected in small subscriptions paid in advance as room rent, before even ground had been broken.

On the books of the bureau of public comfort is a list of several thousand rooms, with their prices, locations, and conveniences, any of which may be engaged by visitors either personally or by letter. After making their selection they receive a permit to occupy the chosen apartments, paying their rent to the bureau, which deals directly with the landlord. By the Chicago *Inter Ocean* a bureau was established and correspondence invited as to accommodations, exhibits, concessions and other matters pertaining to the Fair. Such correspondence was to be directed to the World's Fair department of that journal, and would be answered without other charge than that of the stamps which must be inclosed for reply.

Early in 1893 many millions of tickets were ordered by the management, the first instalment to be delivered on April 1st, and the remainder as needed. These tickets were required not only for sale to visitors, but by merchants for advertising purposes, and as souvenirs and curiosities.

It has been stated that $1,000,000 will be realized from the privileges of selling pop-corn, soda-water, and lemonade, more than half the proceeds of which go into the Exposition treasury. By a peanut vender, it is said, seventy per cent of the gross returns was offered and refused, though with a guarantee that his total payments should not fall short of $140,000. To another applicant was granted the sole right of keeping wheeled chairs on the grounds, of which are provided no less than 2,400; horse vehicles are not admitted within the inclosure. To pay the cost of these chairs and of their attendants, and to meet his obligations to the management, it is stated that the receipts of this man must reach $1,000,000.

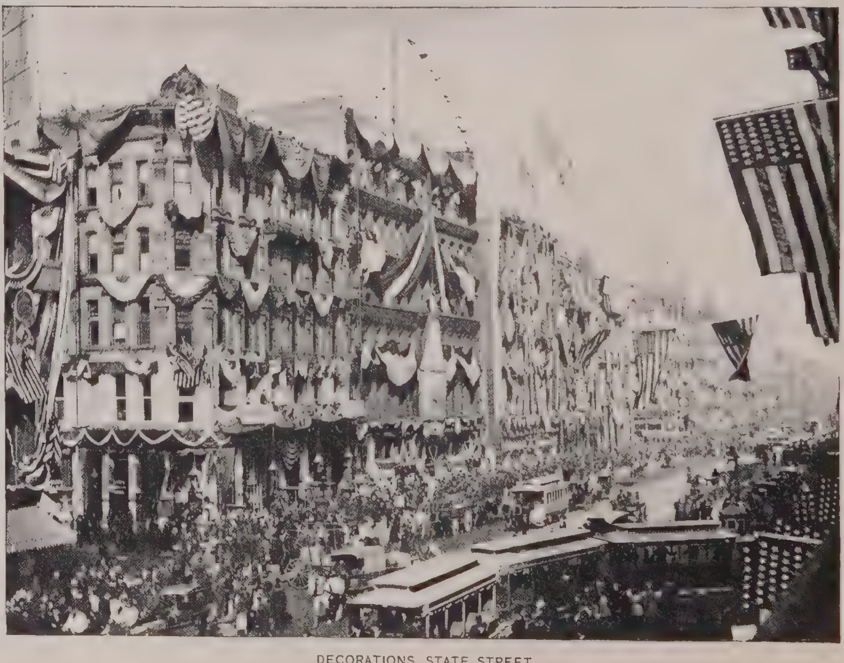
From the commencement of work on the grounds and buildings up to the middle of December 1892, John E. Owens, director of the medical bureau, reported 23 deaths, 2,092 cases requiring surgical treatment, and 1,703 needing medical treatment; but as to the surgical cases most of them were of slight injuries. Nevertheless the casualties were greater in proportion than those which have occurred on many an historic battle-field. The largest number of accidents occurred at the Manufactures building, where nine men lost their lives, most of them by falling from great heights. No spectators had been injured except at the dedication services, and that so many of the workmen suffered was due, as I have said, to carelessness and inexperience, and not to any want of precaution.

TELIS VITA HOMINVM DVPLICIBVS VELVT
VESTIS, MIXTA BONIS ET PARITER MALIS

CHAPTER THE SIXTH

FROM THE DEDICATION TO THE OPENING—THE NAVAL REVIEW

THE three October days of the dedication ceremonies, from the 20th to the 22d of that month, were days that will long be remembered in the annals of the Garden city, the business portions of which were almost concealed by their wealth of decorations. Never before had there here been witnessed a spectacle, or rather a series of spectacles, at once so dignified, brilliant, and impressive, and never had been gathered from our own and foreign lands so great an assemblage of eminent men. To thousands invitations had been extended, and by nearly all accepted, including among others the president of the United States and his cabinet,—the former detained by domestic affliction,—the vice-president, ex-presidents Hayes and Cleveland, the judges of the supreme court, the members of congress, the governors of states and territories, the foreign diplomatic corps, the envoys of foreign powers, army and navy officers, and the foremost representatives of commerce and industry, of science, art, and education from every land.


DECORATIONS, STATE STREET

A gray autumnal sky ushered in the morn of the 20th, when half a million of Chicago's citizens filled the streets at every point of vantage from which could be witnessed a parade of civic, fraternal, and other organizations, 80,000 strong, passing in review before the vice-president of the United States. At noon, when the streets were cleared without disorder, all the invited guests, except those who took part in the procession, were assembled on the main stand, where a few minutes later were heard the sweet, fresh voices of children singing the national anthem. Then came a brief interval of silence, as from his box, seated side by side with the nation's vicegerent, the director-general of the Exposition gave forth a signal that the great civic army was approaching. Following a squadron of mounted police came a band playing "La Belle Chicago," a

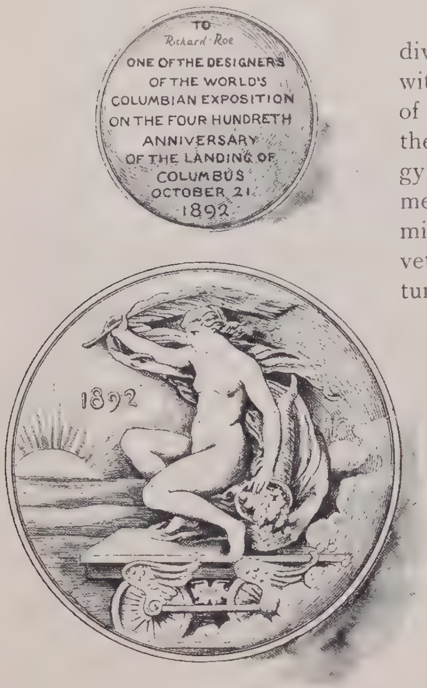
DECORATIONS. CHICAGO STREETS

melody composed for the occasion, and next the band of the Mexican republic, permitted, at the request of President Diaz, than whom no foreign potentate has displayed a deeper interest in the World's Fair, to participate in its initial ceremonies. Then as chief marshal rode General Miles, in front of his numerous staff, attired in civilian garb, and riding the sorrel charger which has shared with him the hardships of many an Indian campaign. Next came in view the head of the first grand division, composed of the city officials and the members of the city council, escorted by six platoons of the Chicago hussars, mounted on coal-black steeds, and with a rear-guard of grand army men and sailors, all veterans of the civil war.

PROCESSION MICHIGAN AVENUE

At the head of the second division, preceded by the Pullman band, came the Italian societies, carrying the banners of their native or adopted land, and after them the legion of Garibaldi, followed by other military companies, mounted and on foot. Then, drawn by ten horses, was a huge canvas in the form of a float, representing a rock-bound coast, and beyond it the *Santa Maria* tossing amid the waves, her sailors dressed in the garb of the Columbian era. Next appeared the governors of states, headed by those of Delaware and Pennsylvania, and in the carriage of the latter General Snowdon, by whom were suppressed the Homestead riots. Much cheering greeted the advent of Governor Bulkeley and his Connecticut foot-guards, attired in the uniform of French grenadiers in the days of Louis XVI, when first the corps was organized. With still louder cheering were saluted Governor Russell, the boy ruler, as he is termed, of the Bay state, and Governor Flower of the Empire state, the acclamations lasting until both were well out of sight. No less hearty was the welcome accorded to the governors of Ohio, Iowa, and other states, but above all to the governor of Illinois, who rode without staff or escort, merely raising his hat as he passed the reviewing stand.

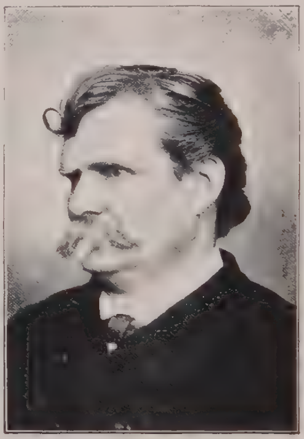
After the procession of governors came what was to the more thoughtful among the multitude one of the most interesting features of the parade. Preceded by their own band, headed by their principal, and dressed in neat, new uniforms were several companies of Indian students from the industrial school at Carlisle in Pennsylvania. The leading company carried slates and school-books; the second, type galleys; the third, implements or products of agriculture, and the rest, such specimens or tools as represented their various pursuits. Halting in front of the grand stand, they performed a series of military evolutions with a rapidity and precision which won the applause of the observers. But how attractive soever this spectacle, it evoked as much of sadness as of interest, for here in this handful of boys, some of them the sole survivors of nations now swept from the earth, were represented the few who had availed themselves of this boon of education which the government extends to the offspring of its meanest citizens.



MEDAL PRESENTED DESIGNERS

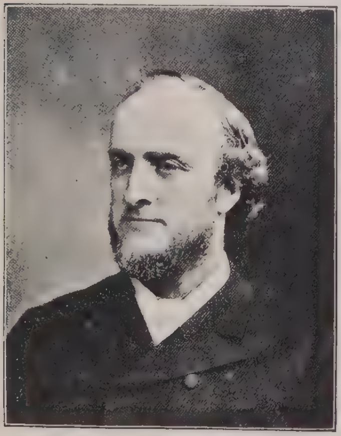
BENJAMIN BUTTERWORTH

The order of Foresters formed the next division, the Illinois lodges being represented, with many from states adjoining. Other features of the procession were the Royal Orangemen, the members of athletic clubs in their gray gymnasium suits, followed by Highlanders, Norsemen, Danes, and Scandinavians in civil or military garb. The appearance of the sons of veterans was the signal for a discharge of miniature cannon, loaded with fire-crackers, and shot from a mammoth float, built in imitation of the *Monitor*, and manned by veterans of the Farragut post. There were cadets in blue and gray uniforms; there were the Riverview guards in zouave uniforms; there were colored troops, with a colored lodge of the knights of Pythias, and there were a thousand well-drilled youths from high schools, grammar schools, and training schools. Nor should we forget the Catholic division, which in number exceeded all the rest, including Catholic foresters and knights, members of the Catholic Benevolent league and of the ancient order of Hibernians, with thousands of others from almost every class and nation in the world.



HENRY WATTERSON

Though somewhat ponderous, and composed of such heterogeneous elements as had never before been grouped in the ranks of a parade, it was an interesting procession, one compared with which a military march is of small significance. Here was the initial celebration of the greatest of all human triumphs, the triumphs of peace, of arts and industries, greater than were ever achieved by the armies of a Cæsar or a Scipio. Here were assembled people of all nationalities, ages, and conditions in life, from grizzled veterans of the civil war, bearing aloft their country's banner, to rosy-cheeked boys and girls, waving their miniature flags. Here in the same line marched the Teuton and Sclav, the Orangeman and Catholic, the African negro and the American Indian. Foes by heredity became as brothers, and under the colors of the great republic marched scores of thousands of foreign birth, whose forefathers had met on many a bloody field. The hatreds and jealousies of olden days were laid aside; for now all were Americans, native, naturalized, or by sympathy, all were freemen, and as proud of their citizenship as of their country.



BISHOP C. H. FOWLER

CHAUNCEY M. DEPEW

Before sunrise on the 21st the inhabitants of Chicago were awakened by the deep-voiced intonation of artillery, announcing the anniversary of the day when, four centuries ago, the great discoverer set foot on the shore of this western wilderness. An hour later a million of people were in the streets, two-thirds of whom were journeying toward the place of the Fair, or to the park adjacent, where was to be held such a military parade as was never witnessed on the shores of Michigan. By noon at least a quarter of a million souls were gathered within the Exposition grounds, and then it was that their extent was for the first time fairly tested. So far from any symptom of crowding or inconvenience, it appeared rather as a holiday gathering and with ample room to spare. On entering the gates, the first question asked by visitors, one of another, was: "Where is the crowd?" But, as one of those aptly remarked, "You could put a million of people here before the place would have a crowded look." Throngs there were at times on the broad avenues and esplanades, the wide bridges and spacious promenades; but at no hour of the day was there jostling or other discomfort, and never for an instant was there anything resembling a blockade. The Columbian guards, stationed here and there for the preservation of order, found themselves with nothing to do; for there was no disorder. Around some point where a landscape vista or a gem of constructive art arrested the attention, a crowd might linger for a moment; but then a polite remonstance was sufficient, and this uttered in such tones that the most captious could not take offense.

NELSON A. MILES

It was one of those bright October days, perhaps the most perfect weather witnessed in the city by the lake, and brightly shone the temples of the Fair in the mellow autumn sunlight, amid flutter of streamers and pennants from flagstaff, dome, and turret. The waterways were smooth and mirror-like, the greensward that arrayed their banks in robes of emerald contrasting with the sombre hues of the autumnal foliage. For the occasion the great hall of Manufactures had been converted into a vast auditorium, no pillar obstructing the view amid all its covered acres. The decorations were in excellent taste, and among them none attracted more attention than the banner of the Columbian Exposition, here for the first time displayed. In shape it was triangular, its field divided into blue and white, the colors of the lake and of the Exposition buildings. Its sides were fringed with green, gold, and buff, and near the staff, encircled by a laurel wreath, were four C s wrought in Gothic capitals, the initials of the words Cyclos, Christopher, Columbus, and Chicago, the number of C s representing the four hundredth anniversary of the event which the Fair commemorates.

Some two hours after noon the head of the procession, preceded by an escort of cavalry, entered the Exposition grounds. When, side by side, the vice-president of the United States and the president of the Columbian commission passed down the centre aisle, a cheer broke forth from a hundred thousand persons, such as perhaps had not been heard since Lincoln reviewed at Gettysburg the army of the Potomac. An instant later the director-general touched an electric signal, and as with one grand burst of orchestral melody the opening strains of the Columbian march, swelled by a chorus of five thousand voices, rolled through the great auditorium, a hush fell on the multitude, stricken with amaze as though the huge dome had been shaken by the crash of thunder. A momentary silence greeted the final notes, silence even more impressive than the music itself; and then came a tumult of applause, stilled only by the outstretched hands of Bishop Fowler, by whom were offered the opening prayer and thanksgiving; but except for the orchestra and choruses, little that was said or sung on this occasion could be heard beyond a radius of a few hundred feet.

GOV. ALTGELD

Taking advantage of the stillness that followed the conclusion of prayer, the director-general stepped forward and delivered the introductory address, then turned to Mayor Washburne, by whom were tendered to the assembled guests the city's welcome and hospitalities. Next on the programme was the reading of selected verses of the Commemoration ode, written by Miss Harriet Monroe, and read by Mrs. Sarah C. Le Moyne, a portion being set to music and rendered by the orchestra and chorus.

LEVI P. MORTON

By the chief of construction were introduced to the president of the Columbian Exposition its artificers, to each of whom was handed a medal, the orchestra meanwhile rendering Mendelssohn's ode to "The Sons of Art." Then stepped forward the president of the Board of Lady Managers, by whom was explained their work,—the organization of women for mutual aid, the widening sphere of woman's usefulness, and the methods whereby that sphere may be enlarged.

By the president of the Exposition the buildings were transferred to T. W. Palmer, president of the National Commission, who, turning to Vice-president Morton, at the conclusion of his address, asked that he dedicate the buildings and grounds in the name of the government of the United States. After the orchestra had rendered the hallelujah chorus of the "Messiah," the dedicatory oration was delivered by Henry Watterson. Then was sung "The Star Spangled Banner," after which the Columbian oration was delivered by Chauncey M. Depew. The ceremonies concluded with prayer by Cardinal Gibbons, the singing of Beethoven's "In Praise of God," and the benediction pronounced by the Reverend H. C. McCook. While the solemn words of blessing still lingered on the ear, a momentary hush was broken by the crash of artillery, firing the national salute, and as the gray October twilight deepened into dusk, the audience slowly withdrew from a scene such as

ARCHBISHOP IRELAND

few among them had beheld, as few again shall behold. The following day was given to the dedication of such of the state buildings as were completed, or in condition to permit the ceremony, and after a welcome Sabbath of rest, the people of Chicago returned to their usual avocations.

By foreign commissioners who had taken part in international exhibitions, it was declared, some weeks prior to the 1st of May, that to open on that date would not be possible. There were too many unfinished buildings, walls unplastered, leaky roofs, and the accumulation of debris. Moreover, on account of heavy snow-falls, followed by rain and thaw, the work of installing exhibits was delayed until long after the appointed time, and more than once suspended, those which were already unpacked being covered with tarpaulins, and thus preserved from injury. Such was the severity of the winter that the end of March drew near before this portion of the work could be thoroughly taken in hand. For this purpose a special department was organized and equipped, one capable of handling several hundred carloads a day, and with many miles of track connecting the buildings with railroad termini. From dawn till dusk, and from nightfall almost until daybreak, the trains were running goods intended for the Fair receiving the preference in right of way. Express lines were utilized, one of them forwarding by the first train of flat cars ever despatched by express a consignment of British works of art.

JACKSON PARK

If, as the opening day drew near, few of the departments were in presentable shape; if even for some time after the opening men spoke of the Exposition as it would be, and not as it was, it was mainly due to the tardiness of certain exhibitors, many of whom would not even pay for the additional labor needed to instal their wares. By the chiefs of departments and their employés all that men could do was done, and had they been seconded by others they would have come nearer to fulfilling their expectations. From the hall of Manufactures and Liberal Arts came word that the building was practically completed and installation well advanced. In the Agricultural building a number of states and foreign powers were at work on their pavilions, with others ready to commence. In the Electricity building many of the booths were either completed or nearing completion, with hundreds of men to remain at work for each of the remaining days, and, if need be, each of the remaining nights. In the hall of Mines and Mining exhibits were being rapidly delivered at the main entrance, and thence lifted by cranes and carried on trucks to their allotted space.

JACKSON PARK

In the Transportation department it had been found necessary to increase the exhibiting space until, including special buildings, it covered nearly twenty acres. The roof had been seriously damaged by snow and ice, so that it must almost be recovered, thus delaying the work of installation. This accomplished, every effort was being made to complete the preparations, a great transfer table being used for the handling of locomotives and passenger cars. In the Horticultural hall exhibits were rapidly being placed in position, and the space of those who could not be ready in time was transferred to other applicants. And so with the remaining departments, where, as one of their chiefs remarked, "all objectionable features would disappear and all uncompleted groups be finished as speedily as possible. In their stead would come forth forms, lines, curves, combinations, and harmonies, so bewildering and enchanting as to electrify the world."

By those who visited the grounds a few days before the opening could best be realized the magnitude of the now completed task. There was then at work an army of 40,000 or 50,000 men, under such discipline that all seemed to move with the precision of a military parade. Some were busied in cleaning the roads, in leveling roadways, and removing debris; others in gardening, and still others in finishing staff decorations or putting the final touches on buildings, with thousands of painters and carpenters at work and with many additional thousands passing to and fro, on errands, on business, or acting as escort to visitors. Most striking of all was the endless procession of wagons and drays, approaching the grounds from several directions in lines a quarter of a mile in length; then, under the direction of the Columbian guards, falling into other lines already within the park, and proceeding on their way with loads of materials and exhibits. In the opposite direction passed a similar line of empty vehicles, returning for new loads to the railroad depots. Inside the buildings a second army was at work, unpacking and installing exhibits, some by hand and some that must be lifted by derricks and wheeled on cars into place.

GALLERY OF FINE ARTS

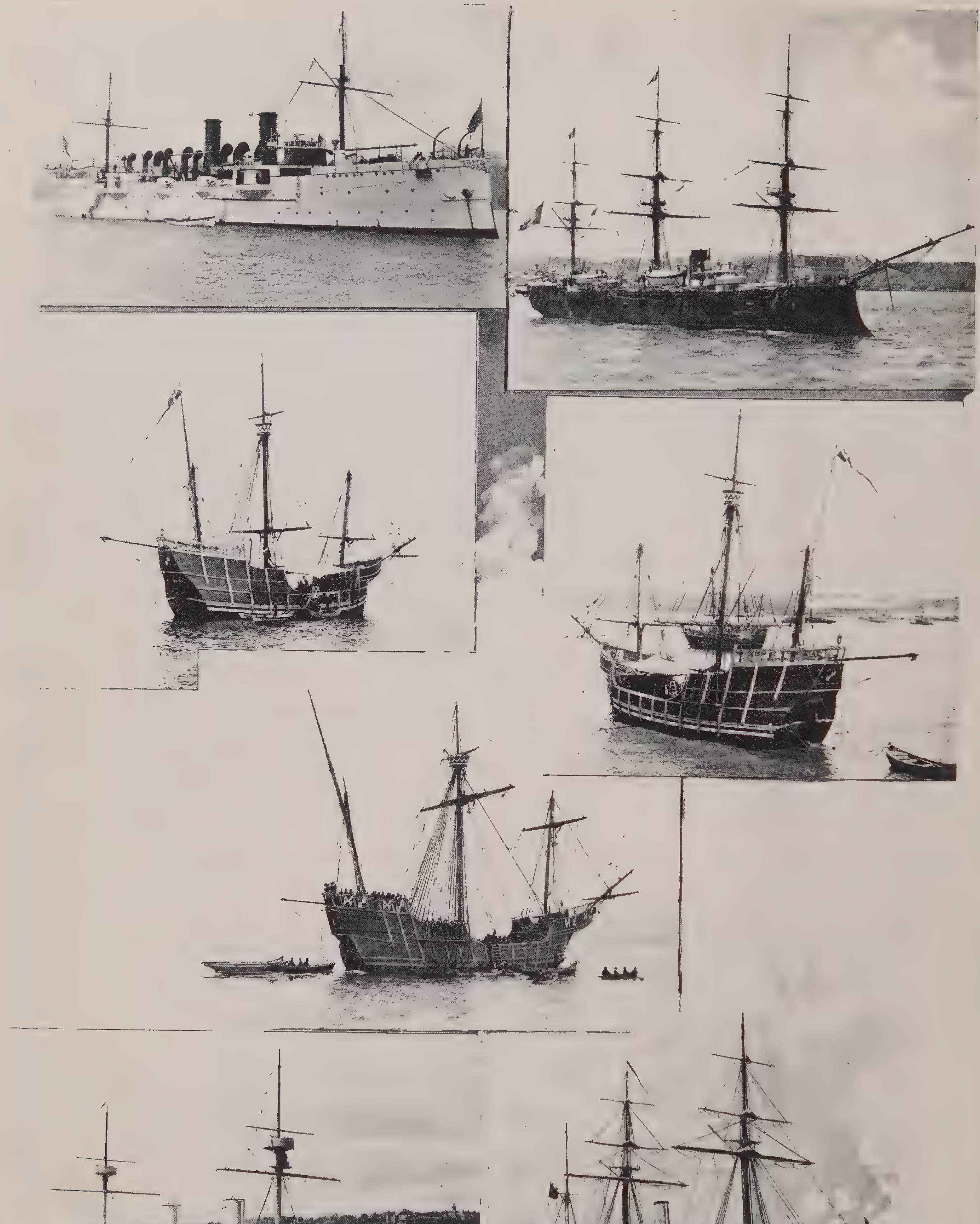
Thus, if not completed by the 1st of May, the Columbian Exposition was, in proportion to its scope and size, as far advanced as some others of the great world's fairs. Never, since the London Exhibition of 1851, and seldom even at our state and county fairs was the display in perfect readiness at the appointed time. To the allotments of space some exceptions were taken, but this was inseparable from the task of housing within certain limits unlimited collections.

And now after more than two years of preparation, after so much had been said and written concerning the great display, so much that was true, so much that was untrue, its gates were about to be thrown open, that all the world might judge for itself how well or ill the work had been accomplished.

As a part of the ceremonies connected with the Columbian Exposition, and before proceeding further with the annals of the Fair, brief space may here be given to the naval review held in New York harbor on the 27th of April, for none of the president's invitations met with more cordial response than the one extended to foreign powers "to send ships of war to join the United States navy in rendezvous at Hampton roads and proceed thence to the review." Here were assembled, as one international fleet, thirty-five vessels of war, representing the best and most interesting naval specimens of Old and New World architecture, from the caravels of Columbus to the swiftest and most powerful of steel-plated cruisers. Other reviews there have been on a larger scale, as at Spithead in the jubilee year of England's queen; but never before had the squadrons of England and France, of Russia and Germany, of Italy and Spain, in line with those of other empires and monarchies, passed in parade before a president of the United States.

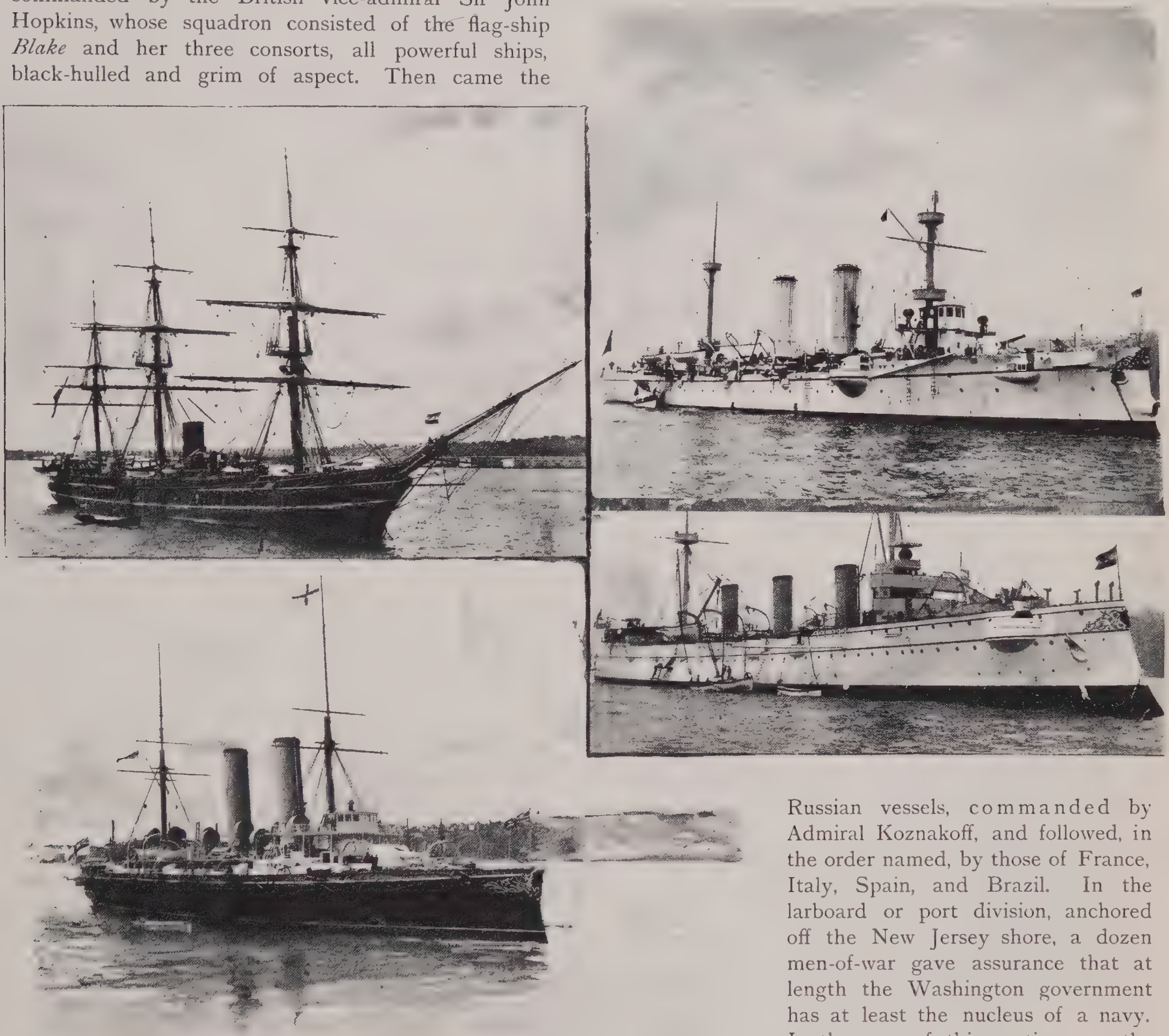
AGRICULTURAL BUILDING

On the 25th of April the fleet arrived in successive divisions in the lower inlet of New York harbor,



NAVAL REVIEW, NEW YORK HARBOR

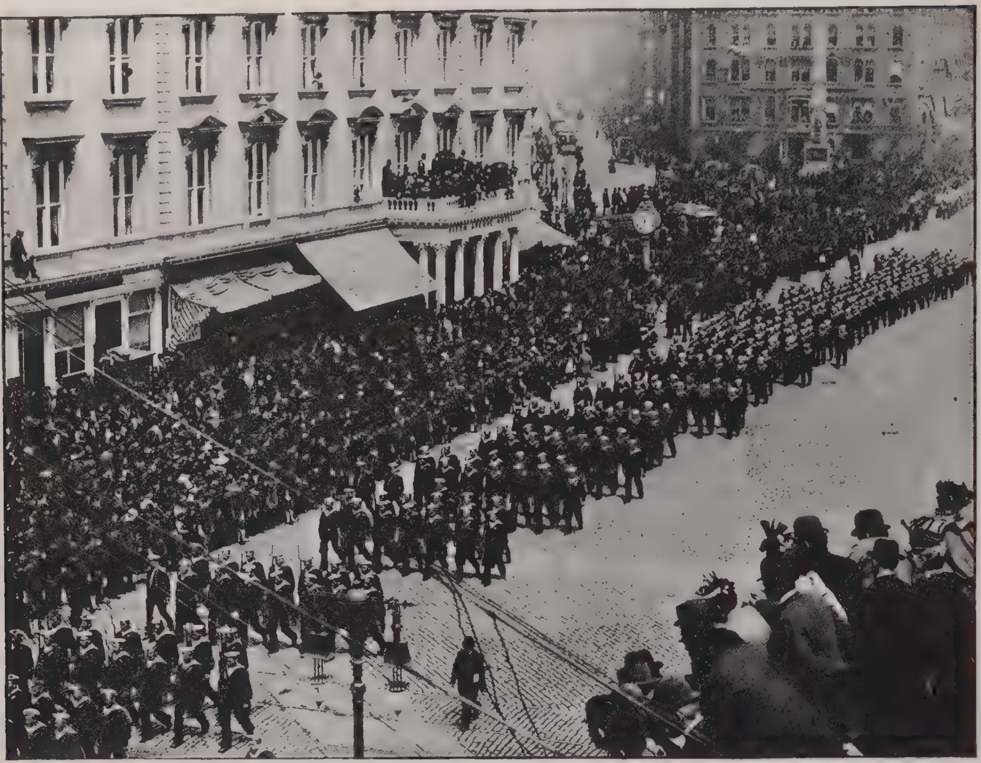
and was brought to its anchorage ground in the upper bay by the British vice-admiral, whose flag-ship, the cruiser *Blake*, led the van of the starboard division. Next morning two guns from the American flag-ship *Philadelphia* proclaimed the signal for opening the ceremonies. Two columns were formed in the Narrows, between which passed the *Dolphin*, the vessel of the president, and the caravels of Columbus. To foreign contingents was assigned the New York side of the river, where was the starboard division of the fleet, commanded by the British vice-admiral Sir John Hopkins, whose squadron consisted of the flag-ship *Blake* and her three consorts, all powerful ships, black-hulled and grim of aspect. Then came the Russian vessels, commanded by Admiral Koznakoff, and followed, in the order named, by those of France, Italy, Spain, and Brazil. In the larboard or port division, anchored off the New Jersey shore, a dozen men-of-war gave assurance that at length the Washington government has at least the nucleus of a navy. In the van of this section was the *Philadelphia*, the flag-ship of Rear-admiral Gherardi, followed by a long array of steel-armored cruisers, one of them named after the city of the Fair. Somewhat strangely their unbroken line of white contrasted with the sombre aspect of the English and Russian columns. The Argentine republics were each represented by a single vessel, and in the entire fleet there were few better models of naval architecture than the German cruiser *Kaiserin Augusta*, which, with her consort and the American ship *Miantonomoh*, formed the rear of the larboard division.



NAVAL REVIEW, NEW YORK HARBOR

In this peaceful pageant, and in the one which to follow, there was much to commend itself to the more thoughtful observer; for here were assembled in perfect harmony, and merely in honor of the occasion, the war vessels of all the great naval powers, a single squadron of which could, before nightfall, have laid waste the city of New York.

Next day companies of sailors and marines, landing from the fleet, were received by the first brigade of the national guard, and a parade followed. At the head rode the governor of New York, in company with General Horace Porter, followed in carriages by officers from the several squadrons, escorted by officers of the American navy. Then in four brigades came the first division, in which were detachments from all the United



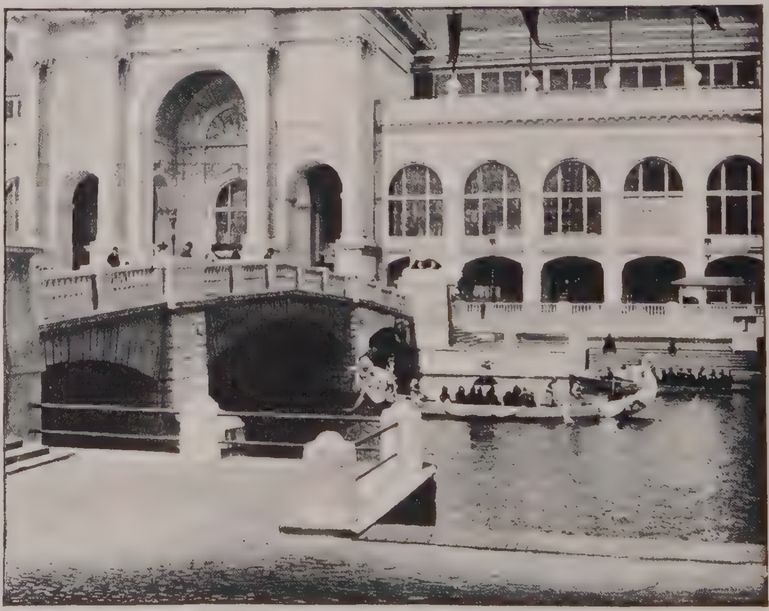
NAVAL PARADE, NEW YORK

States war-vessels. The array was much commended for its appearance and precision, the marines in their neat blue uniforms marching past in ranks as solid as the sections of a wall. The second division was composed of foreign contingents, in front a column of British sailors, followed by companies of marines, the artillery in dark blue uniforms, faced with crimson trimmings, and the infantry in scarlet tunics and snow-white helmets, the latter ranking among the best drilled corps in the service. The Russians followed, with Grand Duke Alexander on their left, a choice body of men, of fine physique and sailor-like aspect. Next were the Italians, and those from the Argentine cruiser, and after them the Hollanders, the quaint, old-fashioned head-dress of their leading company contrasting strangely with the rest. Then a detachment of German sailors passed the reviewing stand in the so-called goose-leg step of the landwehr. Behind them was a battalion of French marines, in heavy marching order, and last of all a colored regiment of Brazilians. In rear of the second division were the naval reserves of New York and Massachusetts, with Gatling guns and rifled cannon.

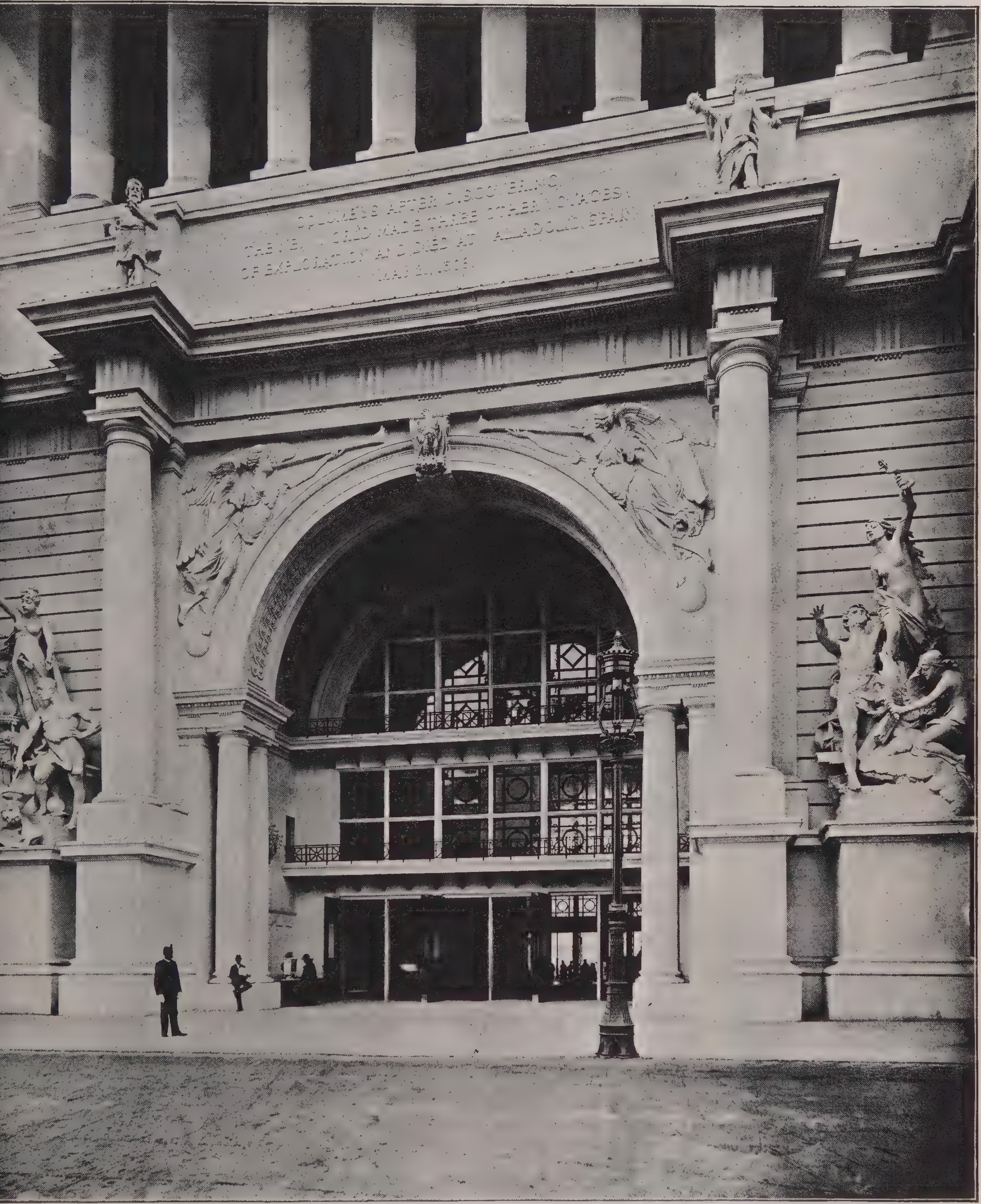
PRESIDENT CLEVELAND

Turn again from the queen city of the ocean to the queen city of the lakes, where the day that followed the naval parade was also one of military and civic display. On this, the second day before the opening of the Fair, three out of the many arrivals in Chicago were the signal for such greetings of welcome as her citizens never fail to accord to those whom they delight to honor. These were the duke of Veragua, the president of the United States, and the liberty bell. In the later morning hours the lineal descendant of the great discoverer, attended by his suite, with his wife, his son and heir, Cristobal Colon y Aguilera, and others of his family and kin, was received at the railway station by the Exposition authorities and conducted with due ceremony to the quarters prepared for his entertainment.

A few minutes after noon President Cleveland and party were met by a committee of welcome, and with the more demonstrative welcome of an assemblage gathered to do honor not only to the chief executive of the nation, but to the citizen and the man. So cordial was his greeting that from the steps of his carriage to the



PORCH OF MANUFACTURES BUILDING



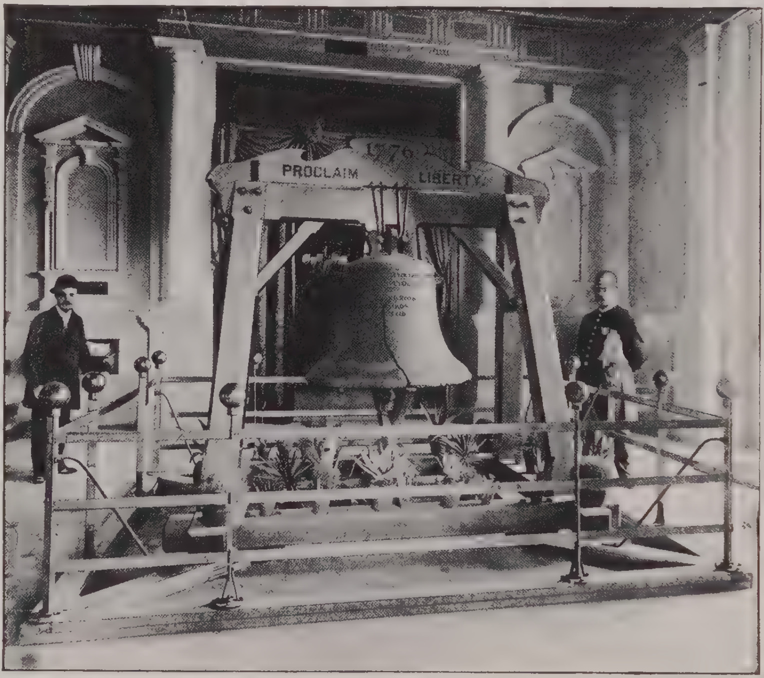
ENTRANCE TO ADMINISTRATION BUILDING

DUKE OF VERAGUA

MARQUIS OF BARBOLES

steps of his hotel he perforce remained with head uncovered, in response to the salutations of the multitude. With no less enthusiasm was received the liberty bell, which, since from the tower of Liberty hall were proclaimed its notes of freedom, had only twice before been removed—to escape destruction at the hands of the British and for display at the New Orleans Centenary Exposition. After a circuitous and triumphal journey through Pennsylvania, Ohio, Indiana, and Illinois, this much revered relic of revolutionary days was drawn in procession by thirteen coal-black horses to its temporary home in the rotunda of the Pennsylvania building.

The Monday following was the 1st of May, the date appointed for the opening of the World's Columbian Exposition. The ceremonies were of the simplest, and may here be described with a brevity of phrase befitting the occasion. Before noon a quarter of a million of people were gathered within the grounds, most of them around the Administration building, in front of which the exercises were to be held. Among the first of the invited guests to take their places on the grand stand were the foreign representatives, all in uniform resplendent with gold and lace, among which contrasted prominently with the rest the black silk robes with white trimmings in which the Coreans were attired. A little later came the vice-president, and after him a number of British officers and Fair officials. Presently the tuning of instruments by the orchestra intimated the approach of the presidential party, the applause which greeted their arrival being extended with no less enthusiasm to the descendant of Columbus, with his family and train, to whom places were assigned on the right of the nation's representative. At a signal from the orchestra leader, Thomas, came the music of the Columbian march, the crash of its overture merging into a majestic hymn, and the hymn into an anthem, swelling at the close into the thunder tones of fortissimo. Prayer followed by Doctor Milburn, and as his eyeless sockets were turned heavenward in supplication all stood with uncovered heads. Next was read by Miss Jessie Couthoui, attired somewhat in the fashion of ancient Castile, and with head-dress of Spanish lace entwined with the colors of Aragon, a poem entitled "The Prophecy," composed for the occasion, and followed by Wagner's overture to Rienzi. Two speeches only were delivered, the director-general reviewing the history of the Fair, and, as he concluded, inviting the president to set in motion the machinery of the Exposition, with motive and lighting power sufficient for all this vast display of industrial processes.



LIBERTY BELL

VICE-PRESIDENT STEVENSON

Stepping to the front of the platform, as soon as the acclaim which greeted his presence would permit, the president delivered an address of which not the least commendable feature was its brevity. He concluded with the following words: "Let us hold fast to the meaning which underlies this ceremony, and let us not lose the impressiveness of this moment. As by a touch the machinery that gives life to this vast Exposition is

GOVERNOR PATTISON

now set in motion, so at the same instant let our hopes and aspirations awaken forces which in all time to come shall influence the welfare, the dignity, and the freedom of mankind." As the final words were spoken, his hand rested for a moment over the spot where, amid the drapery of the national colors lay a golden key and a small ivory knob. Then with a gentle pressure on the button, all the ponderous machinery of the Fair was set in motion as at the touch of a magician's wand. The fountains and sculptured groups of the central court shot forth their spray of silver; side by side with the colors of the United States was unfurled the banner of the Spanish admiralty, and the strains of the national anthem, rising at times above roar of acclaim and salute announced to the world the opening of its Columbian Exposition.

CLEVELAND READING ADDRESS

Of the general features of the Exposition, of its manifold attractions and its few shortcomings, of its grounds and buildings, its artists and artificers, with the story of its evolution, its construction, and management, enough has been said in these the introductory chapters of my work. Be it now my task to describe, so far as pen and picture may, each of its departments and subdivisions, its groups and classes, together with the homes in which they are housed. This I shall endeavor to present without prolixity of detail, without elaboration of technical and tedious description, and in the briefest of phrase that consists with the magnitude of my theme.

NARCISSUS

World's Fair Miscellany.—Certain it is that if advertising and discussion assure success, the great show cannot prove a failure; for never before was any international performance so talked about and written about by the thousands who entered the unfinished buildings during the dedication services, and in the months that still intervened before the opening day. With the scaffolding not yet removed, and an army of workmen toiling day and night at their task, it was felt that never before had American genius been so worthily presented. It was not the extended proportions of the site, nor that on this site were being reared the largest structures in the world; it was rather the beauty of combination, the harmony of scenic, artistic, and architectural effect that impressed the beholder. Never before had been seen such universality of scope and design; for this was no local or sectional enterprise, one neither of the west nor east, but one in which were represented every quarter of the republic, every nation of Europe, of the Orient, and of antipodean regions, all contributing of the best which human art and ingenuity have thus far given to the world.

On the evening of the day that witnessed the dedication services, were held at the Auditorium hotel, in the presence of some three thousand invited guests, the inaugural ceremonies of the World's Congress Auxiliary. On the right of the chairman, Charles C. Bonney, president of the Auxiliary, was Rutherford B. Hayes, ex-president of the United States; on his left Mrs Potter Palmer, president of the Woman's branch, and Archbishop Ireland. Among those on the platform were William R. Hayes and J. H. Barrows, seated next to the ex-president, and near them, Cardinal Gibbons, Bishop Fowler, and the postmaster-general; there were also several eminent divines, professors, and professional men, with governors of states, World's Fair commissioners, and other prominent men and women. After the rendering of the festival overture, followed with prayer by Doctor Barrows, a few words of welcome were spoken by the chairman and by the president of the Woman's branch; then by Mrs Charles Henrotin, its vice-president, was delivered a brief salutation in honor of Queen Isabella. The oration of Archbishop Ireland followed, and to his eloquent address all listened with wrapt attention. The singing of "America" by the entire audience, and the benediction by Doctor Harper, of the University of Chicago, concluded the services.

At the review in Washington park on the 21st there were more than 10,000 troops of all arms and at least 150,000 spectators. Only regulars and national guardsmen were in line except for the Cleveland Grays, whose earkskin shakos and handsome uniforms, with their perfect marching formed a prominent feature in the parade. In their ranks were not a few of the wealthiest of Cleveland's citizens, among others a man worth $10,000,000, probably the richest private soldier in the world.

Soon after nightfall, at a signal from the flash-light on the Manufactures building, a display of fireworks was held simultaneously, and with programmes almost identical in Washington, Garfield, and Lincoln parks, the spectacle being thus divided between different sections of the city to avoid overcrowding. In all there were probably 200,000 people present, the largest gathering being at Lincoln park, on the northern side of the city. The opening piece was a flight of a hundred balloons, from which were discharged in mid-air flights of rockets, their colors changing from silver to red, from red to green, and from green to gold. Most of the pieces were aerial, among them being one representing the American flag; but the set pieces were most appreciated. One portrayed in fires of various hue the landing of Columbus; another the *Santa Maria*, a third the *Pinta* and *Nina*, faithfully depicting the quaint architecture of the galleons. "Chicago Welcomes the Nations" was a pleasing device; but the masterpiece of all was Niagara falls, represented by a framework of fire a hundred feet high, and in most realistic fashion.

At the time when the milkmen were making their rounds, on the dark cold frosty morning of the 20th, thousands of people assembled in the neighborhood of the reviewing stand and there remained until the close of the procession. Only two hours and forty-five minutes were required by this army of 80,000 men to pass a given point, a feat, said generals Miles and Schofield, that broke all previous records, and one that was almost marvellous considering the time required for evolutions and other unavoidable delays.

Seated in either wing of one of the stands were 1,500 school children, with caps of red, white or blue, and so arranged as to represent the American flag. All of them carried banners, which they began to wave as the vice-president drew near, accompanied with singing and cheering. As his hat was raised in response to this salutation, another cheer arose, and still a third as again his silver-gray head was uncovered in answer to their greeting.

No injuries occurred in the crush of October 20th, except for the fainting of a few women caused by the surging of the crowd as the vice-president entered the stand. For a time this mass of humanity waved to and fro like a field of grain before the wind; but a line of policemen forming on the street set their backs against the throng, and bracing their heels on the cobblestones, held them back by main force. Inspector Lewis said it was the largest crowd he had ever seen, and yet one easy to handle, for all save the roughs were disposed to assist the officers, who controlled the multitude without recourse to violence, though some were ejected in a fashion more expeditious than graceful.

On the 19th of October the Columbian anniversary was celebrated in the schools, not only of Chicago but of the United States, by exercises of which a programme had been prepared by the National Association of superintendents. There were essays, addresses, readings, declamations, and patriotic songs, and among the Catholic schools of Chicago a children's parade reviewed by Archbishop Feehan. In many of the assembly rooms was read an appropriate address styled "The Meaning of the Four Centuries," and also an ode by Edna Dean Proctor, entitled "Columbia's Banner."

On the evening of the 19th a reception, followed by a banquet and ball, was given by the citizens of Chicago, at the Auditorium hotel, in honor of vice-president Morton, visiting officials, the representatives of foreign powers, army and navy officers, and other persons of note. At the ball there were several thousand invited guests, and by envoys and embassadors it was pronounced to be on a par with the grandest of European court balls. As few others among the assemblage had ever been present at a court ball, this was a safe remark, although as true as diplomatic.

On the evening of the 20th a military reception and ball were held at the First Regiment armory, Henry L. Turner acting as host. In addition to the vice-president and his party, I find among the names of the more distinguished guests, those of sixteen governors, generals and colonels by the score, with here and there a judge or senator, and several of the more prominent officials of the Exposition. At the Fellowship club, on the same night, a dinner was given to the most eminent among the many thousands of visitors assembled to witness or take part in the dedication ceremonies, and in the personnel of the company was betokened, as never before, the universal interest displayed in the great World's Fair.

During the dedication ceremonies no fees were charged; but admission to the grounds was only by invitation or complimentary ticket; to admit the general public would have imperilled the safety of invited guests. In the hall of Manufactures and Liberal Arts seats were provided for about 75,000 people, with 2,500 reserved for the more distinguished personages, and 15,000 for those specially invited. All others were permitted to choose their seats in the order of arrival.

In some other cities the anniversary was celebrated with parades, exercises, or other demonstrations, each city and town selecting for itself the kind of celebration that suited its taste. In New York it was held on October 12th, and took the form of a military pageant, 50,000 men passing the reviewing stand in Madison Square, with a million or more of spectators lining the sidewalks of Broadway and Fifth Avenue. At night there was a civic procession to Central park, where was unveiled the statue of Columbus presented by Italy to the United States. That the New York celebration was held on the 12th was due to the fact that, according to the Julian calendar, this was the day of the month on which the great discovery was made. If the same event had occurred after the adoption of the Gregorian calendar, the date would have been the 21st of October, or the one on which the occasion was generally observed. At Brooklyn there was a civic and military procession, a feature of which was a division composed of 10,000 school boys, marching with cadenced step and with the precision of veterans. At Boston the ringing of church bells and firing of national salutes at break of day was followed by suitable exercises, by the unveiling of a statue of Columbus on the cathedral grounds, and by a parade. At Philadelphia the exercises were held at the university of Pennsylvania. At Cincinnati there was a procession of some 30,000 civilians, and on the river a realistic imitation of the voyage and landing of Columbus from vessels built after the fashion of his caravels.

On the day before the departure of the fleet from Hampton roads, the caravels, escorted by Spanish war vessels sailed for New York, where they arrived and were hauled to their station on the night of the 24th, after being driven by stress of weather into Chesapeake bay. Thus were the *Santa Maria*, *Pinta*, and *Nina* spared the ignominy of being towed like floating baby-carriages, in company with these mammoth squadrons and astern of some naval leviathan, into the river which Verazzano discovered less than a score of years after the death of Columbus. Thus also was avoided a ludicrous aspect in the arrival and initial manœuvres of the fleet.

The forenoon of the 27th was the time appointed for the naval review; but on account of rain this was postponed for two or three hours by order of President Cleveland. His reasons were that a fair afternoon was predicted by the Signal Service bureau and that the secretary of the navy, by whom he would be accompanied, was in such feeble health that exposure meant risk of life.

By all it was conceded that apart from the drawbacks mentioned, both review and parade were well managed. At the former the passage was kept clear by tugs and torpedo boats, in conformity with the special powers conferred by congress. Yet such were the tact and discretion displayed by those in command, that none had cause for complaint.

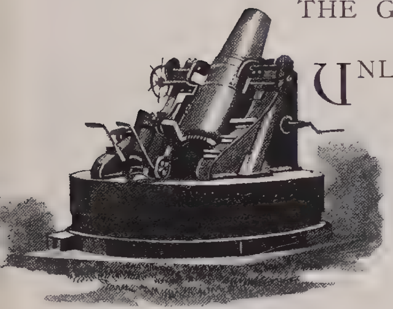
On board the thirty-five vessels of the Columbian fleet there were more than 10,000 officers, seamen and marines, the Russian flagship, *Dimitri Donskoi*, having the largest company, 570 in number, and next, the British cruiser *Blake*. The latter was, as I have said, the most powerful ship in the fleet; but among those of the United States, there were splendid specimens of naval power and naval architecture. The Argentinian vessel *Neuve de Julio* was accredited with the highest rate of speed, reaching 22.7 knots an hour. Next were the *Blake*, with 22 knots, the *Kaiserin Augusta*, with 20.7, and the Spanish ship *Reina Regente* with 20.6. Among the United States contingent there were several which approximated and one or two that exceeded a speed of 20 knots under a forced blast.

Of the many interesting features of the land parade, there were none that excited more curiosity than the pet of the *Tartar's* crew, marching with solemn gait at the head of the British column—a goat bedecked with a mantle of gold-laced scarlet silk.

A banquet at the New York Chamber of commerce closed a series of entertainments and ceremonies lasting for the greater part of a week.

CHAPTER THE SEVENTH

THE GOVERNMENT AND ADMINISTRATION DEPARTMENTS

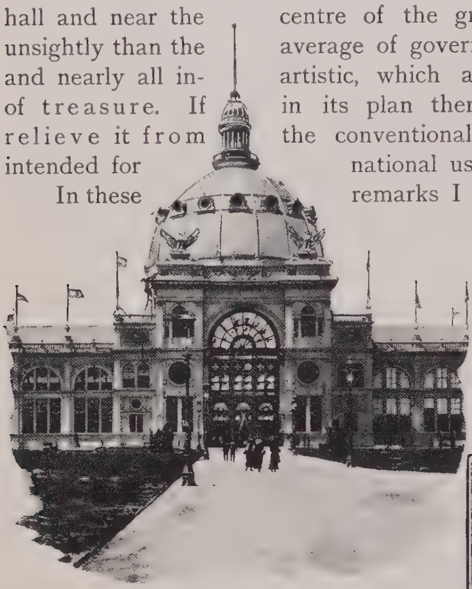


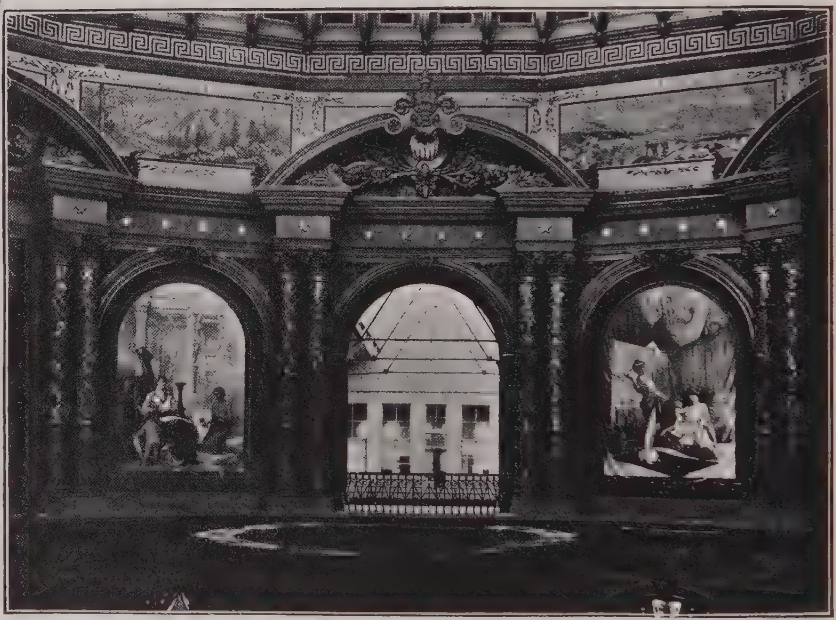
UNLESS it be for metaphysics and moral philosophy, perhaps the least progressive of all human sciences is the science of government. Just as we are to-day no nearer to a solution of the great questions with which Eliphaz the Temanite vexed the soul of the afflicted patriarch, so are we far from solving the political problems with which Pericles wrestled, and which Plato and Aristotle attempted in vain to demonstrate. Among the modern autocracies of Europe we find no such administrative faculty as was displayed by Philip of Macedon; nor in the annals of the Athenian Republic do we find such crudities of legislation as those which deface our own, such abominations, for instance as the poll-tax, the tax on works of art and libraries, and other relics of a by-gone age.

If, in these latter days of the nineteenth century, society is in some respects better regulated than when men selected as kings to rule over them the tallest and strongest of their number, little thanks are due to governors or government. Pointing to our armies and navies, our burden of taxation and our extravagant system of tax collection, to the costly and cumbersome machinery of national, state, and municipal administration, the nations of old might claim with some degree of reason that matters were better with them. In war each man took his share, his share of the fighting and of the expense, his share of the spoils in case of victory and of tribute in case of defeat. As to the other incumbrances, they would have banished them from their midst as quickly as would Carlyle the "scoundrel and sluggard protection societies," whose false philanthropy he loved so well to deride. If history has taught us anything, it is that the weal or woe of a nation depends on the people rather than on the government, of which there is and ever has been too much. Nations become great not through, but in spite of their government. If at long intervals in the annals of our race, the dazzling generalship of an Alexander, a Cæsar, or a Napoleon has raised a nation to the highest pinnacle of glory, such ephemeral splendors have ever been followed by collapse. The world has no use for such men, and no longer is it possible for any one man to shape its destinies or fashion its fate. That which the peoples of earth accomplish now-a-days is the aggregate result of their intelligence, energy, and thrift, and in that result government figures at best as an insignificant factor and a necessary evil, whose greatest achievement would be to confine itself to its legitimate functions.

Within the six acres of space allotted to the government display it cannot be said that the authorities have failed to collect such a series of national exhibits as was contemplated in the organic act of the Exposition. In one of the sections of that act are thus outlined the scope and purpose of this department: "There shall be exhibited at said exposition by the government of the United States, from its executive departments, the Smithsonian institution, the United States fish commission, and the National museum, such articles and materials as illustrate the function and administrative faculty of the government in time of peace, and its resources as a war power, tending to demonstrate the nature of our institutions and their adaptation to the wants of the people." Add to this such accessories as the naval exhibit, the life-saving and signal-service stations, the lighthouse, the hospitals, the weather bureau, all contained in separate buildings, and we have probably the most complete collections ever grouped together for such a purpose. The entire department was planned under the control of the government board, composed of the chiefs of its several divisions, and by which were expended to the best advantage the amounts appropriated for its purposes.

To the character, scope, and arrangement of the government exhibits there are few who will care to take exception, but as to the buildings in which they are housed, the main edifice has been not inaptly termed "the only discordant architectural note in Jackson park," the only one erected, as it would seem, without consulting the Exposition architects, and as to design, differing as widely from its neighbors as decorative art differs from the mechanical process of manufacture. Its prominent site, moreover, north of the Manufactures hall and near the centre of the grounds, gives further emphasis to its unsightliness. True, it is less unsightly than the average of government buildings, some of them deformed, most of them commonplace, and nearly all inartistic, which are being scattered broadcast about the republic at no small outlay of treasure. If in its plan there are certain commendable features, these are yet not enough to relieve it from the conventional monotony which appears inseparable from structural compositions intended for national use.


ENTRANCE GOVERNMENT BUILDING


UNDER DOME GOVERNMENT BUILDING

In these remarks I cast no aspersion on its artificer, who, chosen for the task in virtue of his office as supervising architect of the treasury department, labored under the burden of manifold duties and responsibilities. His plan is well balanced, articulate, coherent, practical, and if somewhat cumbersome, with lack of due proportion and crudeness of decorative scheme, this is merely the fault of a system based rather on utility and tradition than on the recognized principles of art. In the architectural department at Washington there are frequently planned from two to threescore public buildings at a time, many of them large and costly, and all of specified materials and workmanship. Only with thorough organization could such a task be accomplished at all, and no wonder that instead of a chaste and elegant composition, carefully designed and studiously elaborated, we have here a building planned amid the pressure of other work, with business-like despatch, and according to the established formulas handed down by a long succession of official architects. It is not the government building as a building that has provoked so much unfavorable comment, but the fact that it is out of place, that it is the only break in the symmetrical outlines which veil the huge dimensions of the Exposition temples, veils them so completely that the observer almost fails to notice their colossal proportions while admiring the harmony of effect.

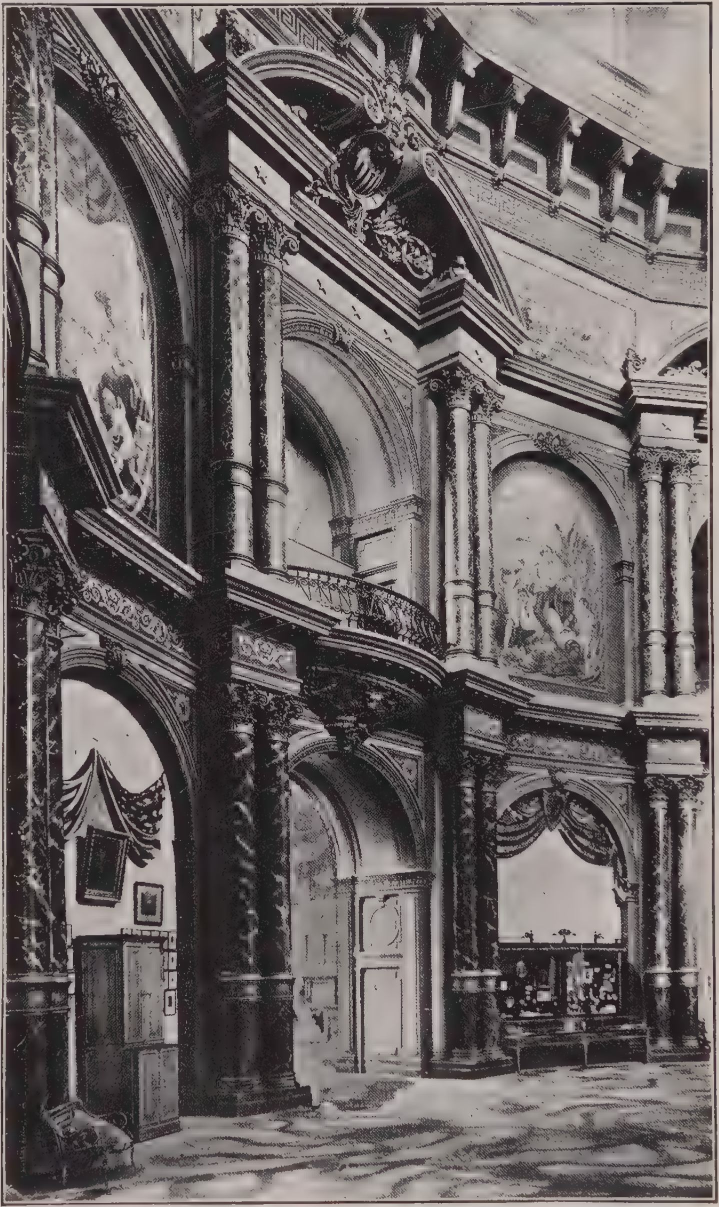
In the evolution of his scheme the architect of the federal edifice must provide for the several departments of agriculture, war, justice, state, the treasury, the interior, the postoffice, the fish commission, the national museum, and the Smithsonian institution, with quarters for administration purposes and for special collections. For each of these suitable areas must be furnished, varying from a few hundred to more than twenty thousand square feet, and with an entire floor space of nearly 150,000 feet. The general plan includes a longitudinal hall, with subdivisions for the various groups, and flanked with parallel aisles supported by rows of columns, and covered alternately with arched and gabled roofs, the loftier of these aisles having clear-story windows, so arranged that their light may penetrate the entire edifice. Intercepting them transversely is a central nave, with lateral passage-ways, and above which culminates the roof system, masked by a balustrade.

From the centre of the main floor, at the intersection of hall and nave, is developed the domical treatment of the building, taking, below the roof, the form of an arched octagonal pavilion, and above, that of a podium with double windows, flanked by pilasters on each of its sixteen faces. On this are supported the ribs of the dome, near the summit of which is a circular line of projecting windows, and above it a lantern, its base surrounded with a light balcony, the flag-staff which forms the culminating feature displaying the national colors one hundred and seventy feet above ground.

The principal entrances, one in the middle of the east and west facades, are fashioned as pavilions, with a central arch, and above them an allegorical group of figures, on either side of which are eagles mounted on pedestals. At each of the corners is a square pavilion, with glazed opening and low squat dome. On the remaining frontages are door-ways in three divisions, projecting somewhat boldly but treated as in subordination to the main portals. The curtain-walls are divided into bays, with arched windows, flanked with buttresses, and with a line of transoms on the level of the gallery floors.

While the general scheme is not without merit, as in its relation of parts and its economy of space, the structure bears upon it the true government brand. Even to those unacquainted with the first principles of architecture treated as one of the fine arts, it stands forth as an architectural reproach among its chaste and scholarly environment. At best it is merely of conventional type, one that does but scant justice to its opportunity, and fails in the dignity of expression that should characterize our public monuments. Says the architect of the Fisheries building adjacent: "In England, in France, in Germany, and indeed in all great European countries, the public buildings are the highest and most characteristic efforts of their artificers. It is the ambition of every architect to make himself worthy to be employed upon them. They constitute the great prizes of the profession. We cross the Atlantic to see the cities which they have made beautiful. In our own country enough of treasure has been appropriated for national buildings, and expended on them, to make our cities equally noble and attractive. But under the present system these opportunities have been worse than lost; for they have encouraged an unnecessary extravagance of expenditure without adequate return, and they offer no higher type to be accepted as the expression of our civilization than respectable conventionality and organized commonplace.

"If the suggestive contrasts of quality in the buildings of the Exposition should serve no higher purpose than as an object lesson to our legislators, teaching them that their responsibilities in respect to our national architecture are not properly discharged by maintaining a costly architectural factory at Washington, the unsubstantial pageant at Jackson park will not have been in vain."


UNDER DOME GOVERNMENT BUILDING

In the Government building the unsightliness of its exterior is in part atoned for by its central rotunda, whose mural paintings, representing famous scenes and cities, with symbolical groups beneath, and pillars and arches on either side, are all in the highest form of decorative art. Midway in the pavilion is a hollow section cut from one of the hugest of California redwoods, its interior lighted with electricity, and with a winding stairway leading to a platform above. Within the redwood chamber are photographs, showing how this exhibit was fashioned and forwarded into place. Six of the eight alcoves contained within the rotunda were placed at the disposal of the Board of Lady Managers, by whom is displayed a large number of colonial relics, some of them never before exhibited and all of historic interest, prominence being given to the thirteen original states, nearly all of which are represented. Among the Massachusetts collection is a Bible, printed in 1559, and which came to this country on the *Mayflower*, in the keeping of John Alden. There is the Latin grammar which General Warren studied; a copy of the stamp act of 1765; a fragment of Plymouth rock, and a piece of the torch that lit up the cave at Pomfret, where Putnam killed the historic wolf. Next to the pipe which Miles

Standish loved to smoke, lie the spurs and epaulets of Burgoyne, and near them the fife of Benedict Arnold and the visiting card of Aaron Burr. There are also the proclamations of Governor Hancock, and the ring which he wore while signing the declaration of independence. All these and hundreds of other curiosities are grouped among these alcoves.

In the two remaining alcoves and a portion of the aisle adjacent are the exhibits of the State department, whose object is to explain its functions and operations as a working business office, and as the proper repository of the national annals. The first of these functions is illustrated by sample letters and documents of the several bureaus, and on a series of bookshelves is displayed every class of publication issued by the department since its organization in 1789. On the shelves occupied by the bureau of American history are the records of the revolution with the causes that led to it, the original petition to the king, presented by Franklin in 1774, by the side of which is a collection of his autograph letters and documents. In one of the cases is a perfect copy together with a photographic reproduction of the declaration of independence, with portraits of those who signed it, so far as they could be procured. Here also are the originals of the treaty of peace with Great Britain and of friendship and alliance with France.

In the adjoining alcove is a photographic copy of the original constitution of the United States, with portraits of those by whom it was drafted. There are several of the LaFayette relics, of which a larger collection is contained in the French building, and there is a group of Washington relics, including one of his swords, his diary, and other manuscripts, of which a meteorological record is the last production of his pen. There is the original portrait of Washington by Peale, and his statue in bronze by Baron Marchetti. Covering the earlier historical period, and relating especially to diplomatic negotiations, are manuscript documents by Madison, Monroe, Jefferson, Robert R. Livingstone, and others, and with them engravings or portraits in oil. To the more thoughtful observer this is one of the most interesting features of the Fair, and while gazing on these priceless treasures, he wonders how it is that congress has expended many thousands of dollars in printing the records of the secession, and not a single dollar in printing those of the revolution. By a few faithful students of our earlier history these papers were in part transcribed, and thus alone were the public informed of their contents or indeed of their existence.

DONE IN WATER COLORS

BY AN ABORIGINAL OF BOLIVIA

In a series of maps are displayed the several acquisitions of United States territory, under treaty stipulations, beginning with the treaty of Paris, whereby was acknowledged the independence of the United States, and ending with that which Seward negotiated, securing, in 1867, the possession of Alaska. By maps also is illustrated the consular-diplomatic representation of the United States, the first one bearing date of 1776 and the last, that of 1892. The proclamations of presidents are copied from the original, among them the nullification edict of Andrew Jackson, and the one with which in 1863, Abraham Lincoln broke the shackles of the slave. Then is traced the evolution of the American coat-of-arms or government seal from the earliest design submitted to the first continental congress to its final adoption in 1782, with an emblazoned reproduction of that instrument as it exists to-day, after all the modifications adopted since, by act of 1789, it was provided "That the seal heretofore used by the United States in congress assembled shall be, and hereby is declared to be, the seal of the United States."

INDIAN NEEDLE WORK

In the exhibits of the State department are included those of the executive mansion or White house, for with the presidential functions this department is more closely allied than any other. In sample letters and blanks, including an original despatch from each of the foreign powers with which diplomatic relations are maintained, one may study the inner workings of the president's cabinet, with the mode of conducting correspondence with foreign potentates and ambassadors.

INDIAN LACE WORK

In concluding this sketch of the State department a brief allusion to the diplomatic service of a century ago may be of interest, if only by way of contrast with the more costly and elaborate system of to-day. By act of July 1, 1790, the president was authorized "To draw from the treasury of the United States a sum, not exceeding forty thousand dollars annually, for the support of such persons as he shall commission to serve the United States in foreign parts." In 1892 such an appropriation would not have served for the single legation at Paris or London, and how to make it serve, in 1792, for the ministers plenipotentiary at each of these cities and for the residents at Lisbon, Madrid, and the Hague, was one of the problems presented to Thomas Jefferson, the first of our secretaries of state.[1] This he solved, as related in the archives of the department, by appointing for the Hague an agent in place of a resident, thus securing a small surplus from his allotted fund. For the salary of a minister plenipotentiary was allowed $9,000; for his outfit one-seventh of that amount; for extras and homeward passage, $671, and for his secretary $1,350; for a resident the total allowance was $5,653, while the agent must be satisfied with $1,650 and find his way home as best he could; but not at the expense of his government. Jefferson himself was content with the modest stipend of $3,500, with $800 for his chief clerk, and $500 for each assistant clerk, as appointed by act of September 11, 1789. If in such modest proportion were the present salaries of our public servants, we might have more efficient service with less unseemly scramble for office.

IN THE DOME GOVERNMENT BUILDING

UNIFORMS, WAR OF 1812

Opposite the department of State is that of Justice, where are portraits of all the chief-justices and attorney-generals of the United States, together with court reporters. A prominent place is accorded to Judge Marshall, on the right of whom is Oliver Ellsworth, and on his left, Roger Brooke Taney. In a colored chart are displayed the judicial districts of the republic, and that with such clearness and accuracy of delineation that one may readily select and trace the boundaries of each and all. For the student of law there are sets of Howard's and Wallace's supreme court reports, and of the United States court reports, with other law-books and documents more than a century old, and with fac-simile specimens of executive messages from 1789 to 1890, including those of Washington, John Quincy Adams, and Abraham Lincoln.

WASHINGTON

From the rotunda access is afforded to the principal exhibits by a series of aisles at equal distances from the centre. To the north is the Fisheries department; to the north-east the Agricultural display; to the north-west that of the interior department; to the south are the collections of the Smithsonian institution and the National museum; to the south-east are the bureaus of the War department; to the west and south-west those of the Treasury and Postoffice. Apart from those contained in the federal edifice there are several attractions in the grounds and waters adjacent, of all of which, and especially of the naval display, mention will be made in its place. First let us make the circuit of the main exhibits beginning with the War department, as one of the largest and most attractive; for amid the temples

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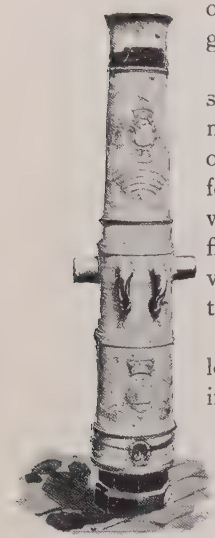
[1] Although John Jay held office for a few months after the department of foreign affairs was merged in that of the state, he never received a formal appointment. In the *Correspondence and Public Papers of John Jay*, III, 369 is a letter from President Washington, dated June, 1789, asking for "some informal communication from the office of secretary for foreign affairs." In September of that year Jay was appointed chief-justice, and Jefferson who had not yet returned from his mission to France, was chosen as the first secretary of the newly organized department of state. After his arrival Jay wrote him a letter of congratulation, in which he favorably recommended "the young gentleman in the office." From his home at Monticello Jefferson writes to the president, February 14, 1790, "I have duly received the letter of the 21st of January with which you have honored me, and no longer hesitate to undertake the office to which you are pleased to call me."—*Id.* III, 381.

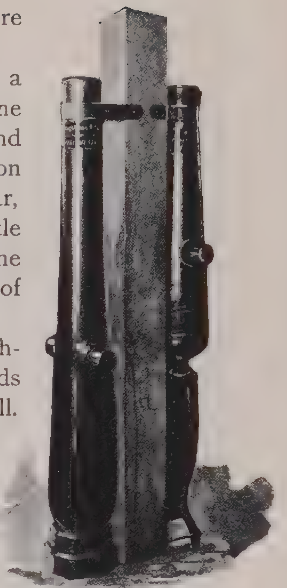


CAPTURED AT YORKTOWN

of an exposition devoted to the arts of peace, there is nothing that excites more general interest than its enginery of war.

In this department, under the direction of Major Clifton Comby, with a staff of officers selected from the various branches of the service, is one of the most complete collections, not only of the implements of war, but of historic and other curiosities, ever grouped together for such a purpose. The ordnance section forms of itself an arsenal well stored with the weapons and munitions of war, with guns of the heaviest calibre and explosives such as are used on the battle field or in besieging a city, with smokeless powder, bombs, torpedoes, and all the varieties of fixed and other ammunition known to the several branches of the service.

In the ordnance section the centre of attraction is a twelve-inch breech-loading rifle-gun, weighing 52 tons and carrying a projectile a thousand pounds in weight. Next to it is an eight-inch breech-loader, carrying a 450 pound ball. In the long array of modern swift-firing ordnance are several guns of the Hotchkiss pattern, perhaps the most destructive of modern weapons, one of them throwing twenty to thirty shots a minute a distance of two miles or more. There is also the lightest of light field artillery, a one-pounder Hotchkiss, strapped on the back of a mule, with a wheel on each flank, a miniature carriage, boxes for ammunition, and a soldier's blanket. For an entire battery six loads are required, each of similar fashion, and to unlimber and bring such a battery into action is the work of a very few minutes. On either side of the portal is a mortar of modern make, such as are now being constructed in large numbers for coast defense, and capable of being fired at any angle between horizontal and vertical lines.

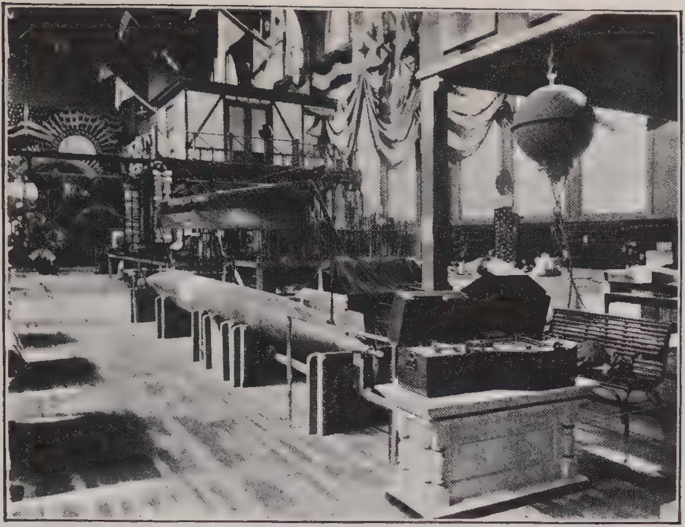


FIRST AND LAST GUNS IN CIVIL WAR

Among a collection of historic guns is a six-pounder presented by La Fayette to the republic whose cause he made one with his own, and near it is a British cannon, surrendered at Yorktown. The guns which fired the first and last shots of the civil war are opposite to a bronze six-pounder of the Mexican war, almost as much out of date as the Chinese breech-loader elsewhere in the collection. Nor should we forget an historic weapon of antiquated pattern, presented by the king of Portugal to the United States, at the request of President Harrison. This is the famous gun "Long Tom," whose home, for about three-quarters of a century, was on the island fortress of Fayal in the Azores. During the war of 1812 it was mounted on the spar deck of the privateer, *General Armstrong*, which, under command of Captain Samuel Chester Reid, held at bay an entire British squadron in the harbor of Harta, Jamaica; but was finally sunk, to avoid capture, as a line-of-battle ship came within range. Other curiosities there are, not numerous, but extremely suggestive, including Confederate torpedoes and shells, a collection of historic rifle-balls, two of which met in mid-air at Gettysburg, and, as would appear from their flattened surfaces, with equal propelling force. In the stump of an oak tree are the marks of musket balls by which it was riddled at Spottsylvania courthouse. A cannon wheel tells its tale of the war, as does the case of rusty, twisted, and shattered muskets gathered from many a battle-field.

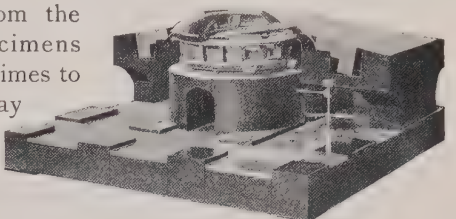
There is powder of all varieties, safely stored within glass cases, from the description commonly used in the civil war to the smokeless explosive with twice its power, and which, now that it can be handled without fear of accident, is gradually superseding the other. Of small arms the display is varied and measurably complete; but in this division the United States appears somewhat at a disadvantage, as compared with European exhibits, more so perhaps than in her collection of ordnance she excels the nations of Europe. This is readily explained by the need of furnishing the standing armies of the latter with the best and most recent weapons, changed at quickly recurring intervals, in keeping with the inventions of science. Here we may compare the Springfield rifle and its trowel-shaped bayonet with the Martini-Henry and its sword-shaped appendage, with serrated edge. Germany and Austria have given us their

PNEUMATIC DYNAMITE GUN



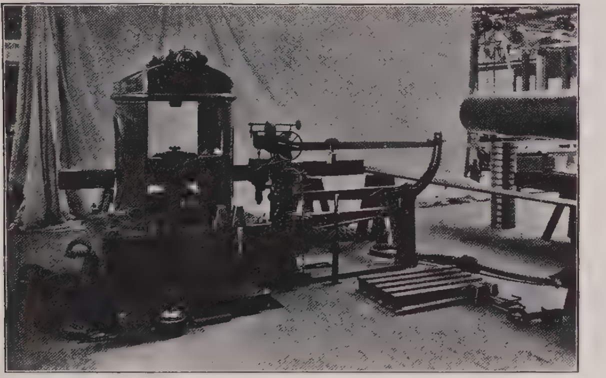
SIMS EDISON FISH TORPEDO

Mannlicher rifles; France, the Lebel, Denmark, the Crag-Jorgensen, and other nations, weapons of great power and precision. But if our collection is not the best, it is by far the most interesting of all, for here are small-arms of every pattern and period, from the earliest specimens of colonial times to such as to-day are stored in the magazines of the war department. There is also a gun-shop in actual operation, where small arms and cartidges are manufactured. The method of making gunpowder may also be studied, but only so far as it is generally known, for the more occult processes are not here revealed.



MODEL GRUSON TURRET

To illustrate more fully the difference between the weapons of the present and the past, the modern exhibit, in the way of small-arms, is in proximity to the historic collection already described. Further to display the progress made in the manufacture of arms, from its earliest inception up to this year of 1893, on the eastern wall adjacent is a series of guns and pistols, from the most ancient up to the most recent patterns. Among the former class is a Chinese wheel-lock pistol, the most antiquated of all, with a heavy wheel-lock musket of the make of 1520, and match-locks of Arabian, Indian and other patterns. Then come flint-locks, first invented in the seventeenth century, and in which the various stages of progress are shown, up to the days of Austerlitz and Waterloo, for it was not until 1820 that percussion muskets began to come into general use.



RIEHLE TESTING MACHINE

In the shooting gallery of the Ordnance department are various instruments for determining the velocity of projectiles and the pressure of powder in fire-arms, from the earliest methods to those at present in use. First of all is the so-called powder eprouvette, a small mortar used to test the strength of powder by the distance that a ball is carried by a given quantity. In connection with it is a ballistic pendulum in the form of a swinging block, whereby until recent years pressure and velocity were estimated through the swing of the block under the stroke of a missile. In modern methods velocity is measured by electrical appliances and pressure by the pressure gauge, of which there are several varieties. In the former process the missile passes through two electric circuits, one near the muzzle and the other at a given distance, the interval between the breaking of the currents being recorded by instruments of various dates, many of which are here on exhibition. There are also appliances for target practice, with hand and bench reloading tools such as are used in actual service.

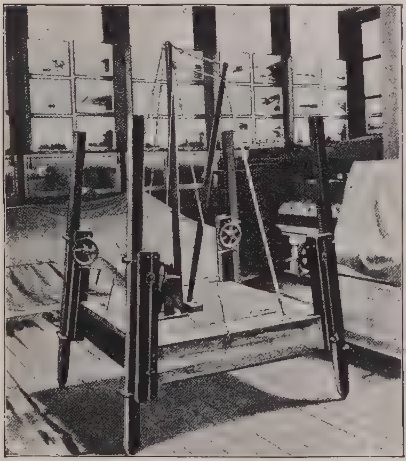
In the exhibits devoted to military equipment the observer does not fail to notice the absence of all suitable provision for the soldier's health and comfort. His tent is the same as in the days of the civil war, and the same is the litter which carries the wounded from the field to a hospital of antiquated pattern. So also in the transportation, the commissary, and the quartermaster's departments. The uniform is still the same as that which our troops disgraced at Bull's Run and covered with glory at Gettysburg; nor is it at all superior as to make or material. Of similar pattern is the canteen to that which he filled from the waters of the Potomac; the kettle in which he boils his coffee and the oven in which he bakes his bread are no less old-fashioned; nor is there any improvement as to quality in the damaged bacon

ESCORT WAGONS

MAJOR-GENERAL AND STAFF

and beans, and the coarse brown sugar that complete his diet on actual service.

But in the quartermaster's department are more interesting exhibits, and especially those which display the uniforms worn since the colonial period until this present year of 1893, together with the civilian garb in which the pilgrim fathers were attired. On lay-figures are reproduced the regimental costumes of the several ranks, from an era antedating Braddock's defeat, continued through the revolutionary war, to the war of 1812, the Mexican war, and the war which ended at the court-house of Appomattox. In this collection are represented all the more prominent commanders of past and present times. In front is a figure of Major-general Schofield, mounted on a wooden horse, and behind him members of his staff, all in full uniform. Then comes a train of pack-mules, a wagon drawn by a six-mule team, an escort wagon and an ambulance wagon, the last containing a paymaster and flanked by Indian scouts. There are hospital tents and models in plaster of the burial-grounds at Arlington and Fort Sheridan. Finally there is the wagon which, for the five years of the war, carried the effects of General Sherman, and near to it a glass case in which is his battle-flag, draped amid those of several of our military chieftains. In other cases are collections of epaulettes, chevrons, and service stripes pertaining to various arms and grades, with all the equipments and accoutrements of officers and men. Nor should we forget the display of national and other flags depending from galleries and roof and from the pillars which support them, containing in addition to those used under present regulations, the colors and corps and division flags carried by the federal armies.



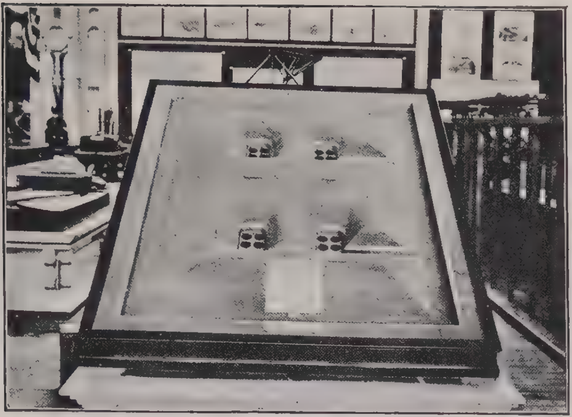
DRILLING PLATFORM

Turning from the quartermaster's section into the rotunda, the visitor pauses for a moment in front of a large model in plaster, depicting in realistic fashion an Arctic scene of 1882. Here Greeley is in the act of welcoming back Lieutenant Lockwood and Sergeant Brainard, after taking observations as far north as 83° 24′, the highest point of northern latitude as yet attained. Near by is displayed in a glass case an interesting collection of Greeley relics.

In the section allotted to the corps of engineers is a choice collection of photographic views, representing the most notable achievements of this department in the line of river and harbor improvements. In addition to these is a number of transparencies, with handsomely colored views, one with a panoramic outline of Chicago harbor, another displaying the Washington aqueduct system, and a third the movable dam across the Ohio river. There are also models of Hell-gate before and after its obstructions were removed and during the process of removal. Among others are those representing the work accomplished at the mouth of the Mississippi river, at the harbor of Key West, and the Delaware breakwater. A study of the various illustrations will show that the sum of $225,000,000 already appropriated for these and similar improvements has not been expended in vain.

In connection with the war department may be mentioned the army and naval hospital, south of the main structure, where are all the equipments

JETTY IMPROVEMENT MOUTH COLUMBIA RIVER



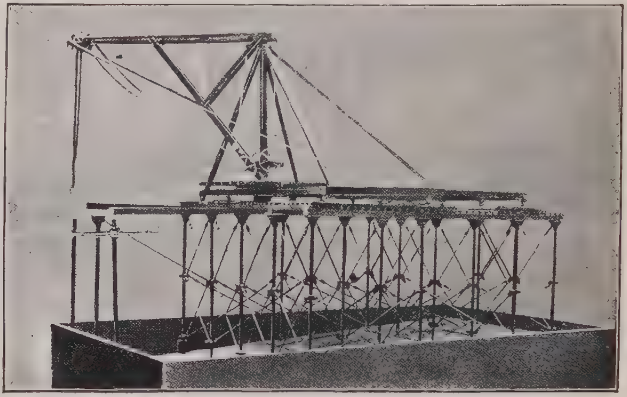
MODEL SIXTEEN MORTAR BATTERY

and appliances in common use at army posts, with a ward in which are a dozen cots, a dispensary, an operating room, and a collection of pathological and physiological specimens. While the treatment of patients is not included in the programme, the method of caring for sick and wounded men is fully illustrated.

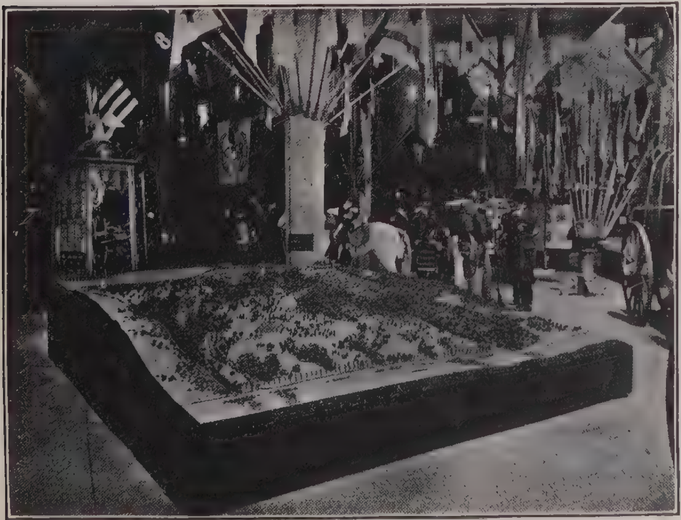
In the medical museum, in connection with the hospital, is a collection of many thousands of skulls and bones, gathered from the battle-fields of the civil war, for the purpose of displaying the effects of wounds from various missiles, with charts illustrating diseased and malformed anatomy. There is also a large case filled with skeletons, scores of which are suspended from the wall in such close array that we might fancy them returning in single file from their own funeral procession. Though many races are here represented, the difference can not readily be detected between the Caucasian, the Mongol, and the Negro. In a corner hidden from sight is the brain of Garfield's assassin preserved in alcohol, and elsewhere are grewsome relics of John Wilkes Booth. On these and other horrors those may feast to the full who will.

Adjacent to the War department are the exhibits of the Smithsonian institution and the National museum, of which it may first of all be said that, while they have taken the first prize at several of the great world's fairs their present display excels all previous efforts. Under the direction of G. Brown Goode, assistant secretary of the institute, by whom were arranged similar collections for the Philadelphia and other American and European expositions, a staff of experts was long engaged in preparing this the largest and most complete collection of all. Moreover, the system of classification and labelling adds largely to its interest, and might have been adopted to advantage in other departments, where the visitor is too often left to grope his way, with the aid of an incomplete and faulty catalogue. Among the purposes of the management, and indeed its principal purpose, has been to show in instructive and entertaining form groups and samples culled from its principal sections, with a view to illustrate the proper methods of mounting, labelling, and installing museum collections. On each specimen is a label and a description, brief but sufficient to afford an adequate idea of that which it represents. Such was the plan adopted by Professor Baird, the founder of the museum, and at the Exposition display no portion of his system has been omitted.

MODEL DISAPPEARING GUN BATTERY



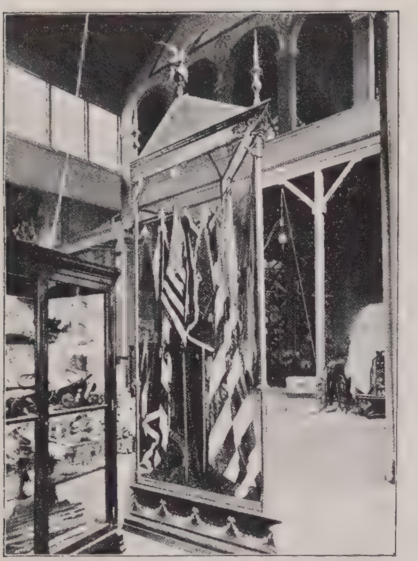
MODEL, CONSTRUCTION OF SCREW PILE



MODEL ARLINGTON CEMETERY

First of all are the ethnological and archæological exhibits, described in another chapter of this work, in connection with those elsewhere in the grounds. Then come the groups relating to physical geology, supplementing, as an illustration of geological characteristics, the mineral display of the geological survey, its own collection being limited

MODEL, SHOWING EXCAVATION


STAND UNITED STATES COLORS

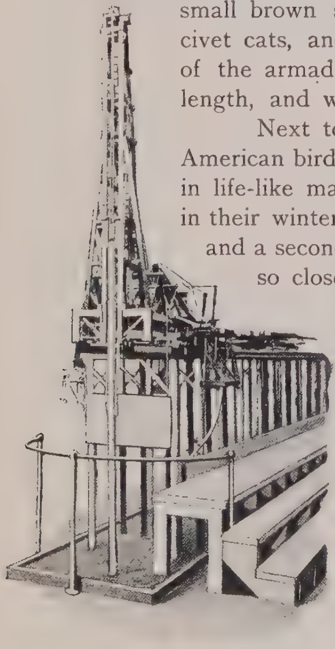
mainly to gems, crystals, and ornamental stones. Here are exemplified cave formations, with the peculiarities of such as are found in the United States. In another group are portrayed the formation and phenomena of volcanoes, active and extinct; in a third the glacial era, showing the portions of the American continent that were covered by ice in by-gone ages.

But to the average visitor the most interesting groups are those of the natural history series, containing as they do the most complete collection extant of American fauna. Here are arranged in regular order, from the monkey classed as the highest to the opossum ranking lowest in the scale, all the families in our animal kingdom, and with rare exceptions all the genera of each family. And so with birds, reptiles, and insects. So far as is possible there is also displayed the environment of the several species, the herbage on which they feed, the trees and shrubs among which they live, and the waters which they frequent. Thus deer may be seen emerging from swamp or forest, the badger at his avocation, the paroquet in the act of feeding, and the hornbill preparing a nest in which to imprison his mate.

WEATHER BUREAU AND LIFE SAVING STATION

In preparing the collection of mammalia skilled workmen were employed for nearly two years under the direction of William Palmer, taxidermist of the National museum, each specimen being mounted in its natural attitude, from sketches and photographs taken from life. Perched on a seaweed covered rock is a sea otter, one of the few perfect skins that have escaped mutilation at the hands of the Aleuts, and secured through the good offices of the Alaska Commercial company. Near it is a walrus, from Walrus island of the Pribylov group. There is also a remarkably fine specimen of the manatee, a species rapidly becoming extinct, and a sea elephant, such as were formerly common along the California seaboard. On a miniature heights is a group of Rocky Mountain goats, and on moss and sand brought from their native homes are Labrador and Alaskan caribou, while burrowing amid cactus and sage-brush are a dozen Texan armadilloes, with California wood-rats nestling in heaps of brushwood. In a tree top is a group of raccoons feeding on berries; of monkeys there is a large collection, one of them a small brown specimen with red face, among the rarest extant. Badgers are there, and tiger and civet cats, and bears, all handsomely mounted, and among other curiosities the smallest specimen of the armadillo genus thus far discovered, a native of the Argentine republic, only four inches in length, and with a sesquipedalian title altogether out of keeping with its size.

Next to the cases containing the animal groups are those devoted to the various families of American birds, the latter among the most interesting of the natural history series. All are arranged in life-like manner; a flock of wild pigeons, for instance, perched on the limb of a tree; ptarmigan, in their winter plumage, grouped on artificial snow, and a second cluster in summer attire, resembling so closely the sere leaves of autumn as to deceive an experienced hunter. In a group of prairie chickens males are represented in deadly combat for the proprietorship of the hens. There are Carolina paroquets, some at roost and others at supper; there is a large assortment of birds of paradise, and of humming birds the most complete collection ever got together. Close to his friend the crocodile is the bird that bears his name, and near by a number


PILE DRIVER AND JETTY

ARMY WAGON AND STAND OF ARMS

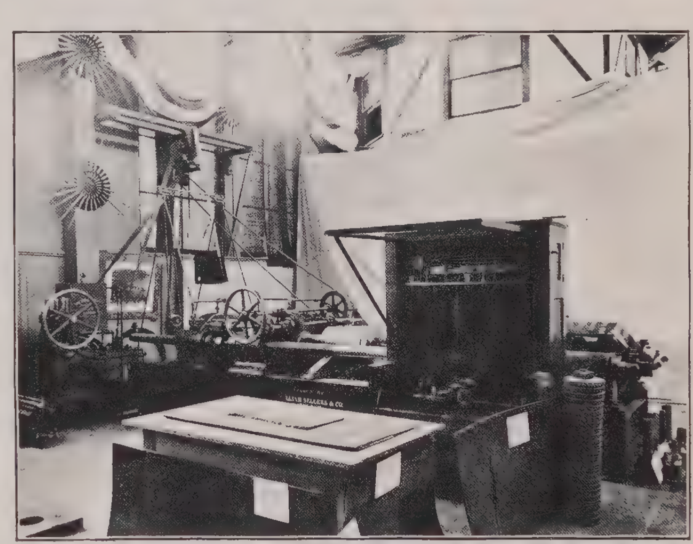
MODEL DAVIS ISLAND DAM

of lower birds, in nests adorned with flowers which, as naturalists would have us believe, they replace with fresh ones when faded.

In addition to beasts and birds there is a collection of all the principal articles of commerce gathered from the animal kingdom. First of all is a large assortment of goods made of hair, wool, and feathers, the last in the shape of brushes, fans, robes, artificial flowers and feather paintings—that is with feathers in place of pigments. Near to some cases containing various kinds of skins and furs, are groups of leather and leathern goods. Among the latter is the collection of a New York firm including the perfect skins of crocodiles and alligators, tanned in many colors, with those of the python and boa constrictor, the lizard and iguana, the eel and porpoise, tame and wild fowl of many species, with others too numerous to be mentioned, from the elephant to the chameleon, the woodchuck and the domestic cat. Next comes the exhibit of horns and whatsoever is made therefrom, with the ramrod of the Dutch Boer and the war-club of the Hottentot, both of rhinoceros horn, up to umbrella and cane handles, tortoise-shell combs so-called, and all the manifold uses to which horns are applied, not omitting glues and fertilizers.

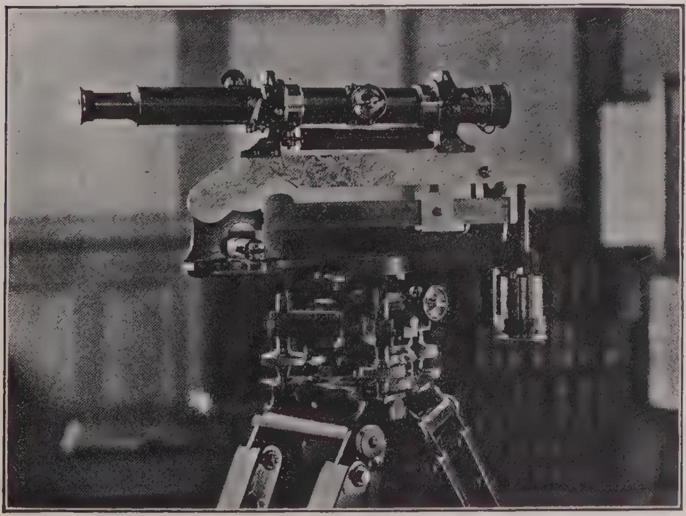
MODEL, GUN LIFT

Teeth and tusks form another division of the National museum exhibits, and here is one of the largest of elephant's tusks, more than eight feet long and weighing nearly one hundred and forty pounds. The manufacture of articles made from ivory is largely illustrated, one segment cut lengthwise, for instance, having brush handles traced on the surface ready for sawing out, while the tip of another serves as a carving-knife handle, and the lower part of the tusk, where the ivory is not solid, is converted into napkin rings. From the tusk of the narwhal or sea-unicorn, whose long and pointed lance of ivory will pierce the side of a ship, there are many beautiful ornaments, and in walrus ivory there are numerous carvings of most elaborate design, the workmanship of Japanese and Eskimos. There are specimens of jewelry and brooches made of boars' and alligators' teeth; there is the sword of the South Sea islander, its edge bristling with the teeth of the shark; there is a necklace of human incisors, and other ghastly exhibits, as of the claws of animals and the joints and finger-nails of men.



SELLER'S TESTING MACHINE

Of oils there is a remarkable collection, including those extracted from the nose of the pilot-whale and the forelegs of the crocodile, the latter valued as a leather dressing. Here one may compare with olive oil for table use that which, prepared from the fat of the guacharo, serves as a palatable substitute to the native of Equador. Here also are oils made from the entrails of the eel and the fat that underlies the upper shell of the turtle,



WATKIN'S DEPRESSION RANGE FINDER

the former recommended as a specific for deafness, the latter for rheumatism. Still another is the golden colored oil used for water-proof coverings and obtained from a Central American insect, which yields more than half its weight of the grease from which the oil is manufactured. Elsewhere is a collection of materials used for medical purposes, and especially such as insects contribute to the pharmacopœia.

GREELEY EXPEDITION

In another group is an illustration of the various articles manufactured from mother-of-pearl, the shell being cut by a small revolving saw and each part used for the purpose to which it is best adapted. The outer edges, for instance, are made into penholders, and the sections adjoining into knife-handles, while the central portion is converted into pistol-handles, and other parts into cloak, cuff, collar, and shirt buttons. By a careful economy of material all these articles may be obtained from a single shell of the largest size.

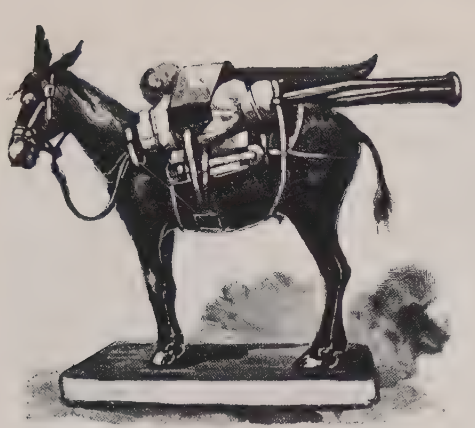
To the numismatist the collection of coins and other currency belonging to the National museum at Washington is one of surpassing interest, for in these quaint and curious specimens is traced the history of all the world's principal media of exchange. Here are not only rounded disks of gold and silver, stamped with various devices, but metals, precious and base, of all classes and shapes that have been used as current funds since the days when Saint Peter extracted from the mouth of a fish the tribute to be rendered unto Cæsar. Among them is the Chinese knife money, pieces of razor-shaped iron, six inches long, current in the first century of the Christian era, before which date knives were actually used as money. There is also the ring money which to Gaul and Briton served for ornament or cash, often forming his entire worldly wealth. Of these was unearthed in Staffordshire, England, nearly two centuries ago, a specimen containing twenty-six ounces of pure gold, some four feet long, and with all the ductility of the virgin metal. Other curiosities are the brick-salt money of Abyssinia, moulded into shape at the king's storehouse, and the brick-tea money of Siberia, by the value of which is largely regulated the price of other commodities.

THE FARTHEST NORTH

MODEL, GREELEY EXPEDITION

Of American coins the earliest are the disks of copper minted by Cortés, and next in chronological order the copper coins of the Bermuda islands, the material for which was imported from England in the seventeenth century. Bearing date between 1737 and 1739 is the earliest coinage of Connecticut, also of copper, the workmanship of a colonist named John Higley and made from ore discovered on his homestead. On one side is the inscription, "I am a Good Copper;" on the other, "Value Me as You Please." These and other curiosities without number are exhibited in the assortment of the National museum, which, together with that of the treasury department, forms one of the most complete collections in the world.

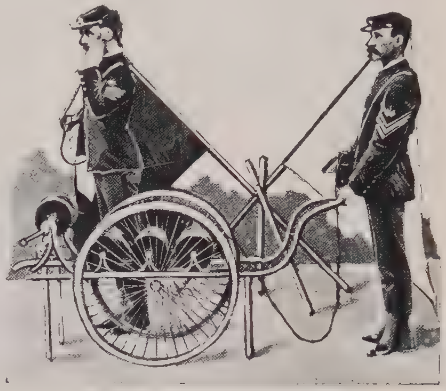
At the southern end of the Government building and on the left of the southern portal is a chamber devoted to the religions and priesthoods of the world, their ceremonials, costumes, manuscripts, relics, traditions, statuary, and other objects of interest to the curious or the devout. In the first case is a breastplate of silver and gold, on which are the tablets of the decalogue, and near it are scrolls of the law in minute characters, with tapestry work representing the sacrifice of Isaac and costumes of Jewish rabbies such as are worn in Mohammedan countries. There are also Hebrew manuscripts, including those of the pentateuch and of the book of Esther, with ancient manuals of devotion, and a Jewish marriage contract in illumined characters inscribed on parchment. Another case, devoted to the ceremonials of oriental Christian churches, contains



HOTCHKISS MOUNTED GUN

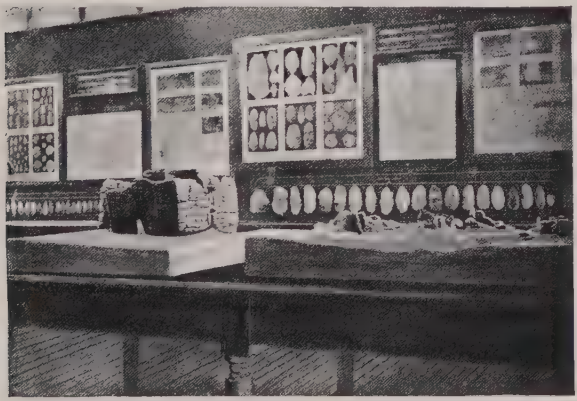
Russian ikons, the vestments of a Russian priest, and scenes from the life of Christ and the virgin, studded with pearls and precious stones. In a third is the Koran with illuminated text, resting on a stand inlaid with mother-of-pearl and inscribed with a Mohammedan invocation bearing the date of 1210. In the Assyrian display is a bas-relief of an eagle-headed divinity and a cast of Shamosh, the Assyrian god of the sun, taken from the original in the royal museum of Berlin. In the Greek and Roman sections are casts of their favorite deities, of the muses, and of historical figures, some of them reproductions of antique statuary contained in European capitals.

On the walls of this room are pictures of mosques and harems, of worshippers in attitudes of penance and devotion, of wedding and other ceremonies, and of oriental scenes in far off eastern lands. Musical instruments there are in abundance, many of them of most primitive device, as the rattle of the Haida Indian, the xylophone of the Zulu, and the drum of the African negro, with gongs and horns, harps and guitars, lutes, zithers, and violins, all these and others gathered from many nations and in every conceivable pattern. Of pottery there is also a large collection, showing the development of the ceramic art from its inception to the present day. The engravings include specimens belonging to the fifteenth and sixteenth centuries, historic and symbolical figures, and etchings, drawings, and color prints of scenery and ancient ruins.

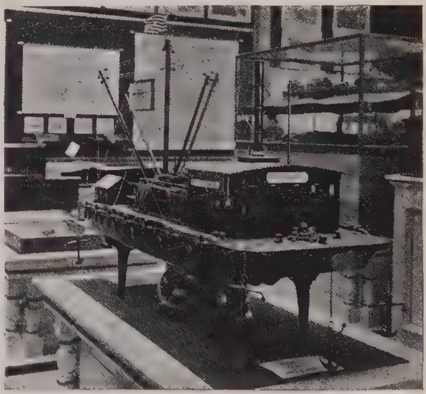


REEL CART WITH FIELD TELEPHONE

In an adjacent room on the opposite side of the nave is a large collection of photographs of prominent Americans, including members of the continental congresses, the federal congress of 1787, and the American academy of sciences, with an assortment of curios, as old colonial bills, powder horns of the revolutionary period, engraved with battle scenes, models of the viking ship and other ancient craft. Several cases are filled with medals, forming what may be termed a series in medallic history, beginning with the one with which William Penn commemorated his treaty of peace and friendship with the Indians, and that with which George III pretended so to do. Then come the medals of the revolutionary era, including among others of value those presented to Lafayette, a Dutch medal acknowledging John Adams as envoy to Holland, and a number of Washington medals in honor of his battles and his inauguration. There is also a large array of the military, civic, and ecclesiastic medals of other countries, the first including those of the Peninsular wars, and the last one issued by order of Napoleon I. Finally there is a collection of coins, of which the oldest was minted in England in 1615. Others worthy of note are a Washington two-penny piece of 1795, and pieces of Mexican cob-money, roughly hammered into shape and stamped with the arms of Spain.



MODEL CASA GRANDE, ARIZONA



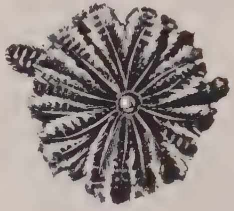
EXHIBIT, GOVERNMENT BUILDING

In the Treasury department, adjoining that of the National museum, are portrayed the financial history and financial condition of the United States, from the war of independence, when continental money ranked lower than the Argentinian currency of to-day, until, in this year of 1893 our bonds sell almost on a parity with British consols, esteemed as the most stable of national securities. Here he who will may study the operations of one of the heaviest of coining presses, not in the act of producing coins, but stamping medals of bronze for those to whom they may be awarded. In truth it is a powerful machine, and yet not more so than its uses demand; for to coin the half dollar with which the Fair

MODEL, CLOSING SECONDARY CHANNELS

pilgrim pays his admission fee requires a pressure of more than 200,000 pounds, and for a silver dollar more than 300,000. It produces, moreover, every coin in use, from a one-cent piece to a double eagle, and that by merely changing the die.

SCALP


INDIAN FEATHER WORK

In show-cases adjacent to the press is the treasury collection of coins and medals, forming, as I have said, in connection with that of the National museum, one of the largest and most valuable collections extant, valuable more for the rarity of its specimens than for their intrinsic worth. Started in 1830 this collection includes nearly every description of coin issued by the government, beginning with the first one, minted in 1792, in the form of a silver half-dime or disme, as our forefathers termed it. Most precious of all is a dollar of the mintage of 1804, one of the few that remain, and worth many times its weight in gold. In all there are 7,500 rare coins and 2,500 medals; nor is the collection limited to American coins; for here are not a few gold pieces from two to three thousand years old, with the shekel of the Hebrew patriarchs, the silver currency of Ægina, and the golden stater of the Alexandrian era.

Elsewhere are exhibited in a gilt frame of cunning design specimens of all the paper currency, bonds, and other certificates of value at present in use. Here are treasury notes ranging in denomination from $1 to $1,000, with four-per-cent bonds of a face valuation of $50,000 and a market valuation of nearly $60,000, with gold and silver certificates representing fabulous amounts, but not, it need hardly be said, in convertible shape, the bills and bonds being printed only on one side and with portions of the numbering omitted. In a word we have here a complete reproduction of the currency system of the United States, including all such outstanding obligations as are represented on paper.

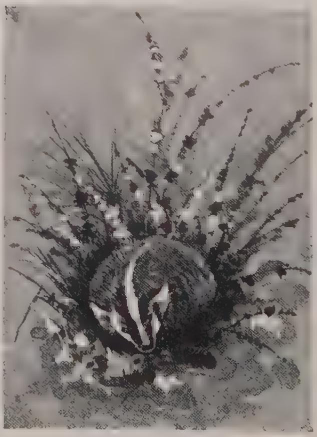
LITTLE WOLF

OF THE SIOUX NATION

LITTLE CROW

In the frame adjacent are copies of the commissions, official invitations, and other documents issued in the name of the United States, together with a collection of stamps. In a third case are the vignettes of all whose portraits have appeared on certificates of value or other instruments issued by the national government, including those of all the secretaries of the treasury, from Alexander Hamilton whom Washington appointed, to John G. Carlisle whom Cleveland called to office. There are pictures of such historic events as have been used for symbolic decorations, as the landing at Plymouth rock and Perry's achievement on Lake Erie, and vignettes of many of the more prominent generals of the civil and other wars. Side by side with Winfield

LIMESTONE CAVERN


AMERICAN BADGER

WARRIOR

SMITHSONIAN EXHIBIT

Scott, in the stiff uniform of his day, is General Custer, attired in the frontier garb which he loved to wear. Grant, Sherman, and Sheridan are there, with others whom the nation will never forget to honor, and among statesmen and financiers are many whose names have long been household words throughout the land.

In connection with the Treasury department may be mentioned the exhibits of the United States Coast and Geodetic survey, consisting largely of the instruments used in this branch of the service. But here the centre of attraction is a device representing in plaster of Paris the surface of the United States, with an area covering about four hundred square feet and a scale of one to each million inches of actual area. The true contour and curvature of this portion of the earth are also delineated with accurate distances and elevations. At intervals from the coasts a series of blue lines represents each increase of a thousand feet in ocean's depth. Around the map is a stairway with landings, about two feet from its surface.

KIOWA GIRL

INDIAN LACE

In the Lighthouse exhibit, adjacent to that of the Geodetic survey, are models of old lighthouses, lightships, buoys, and river-lights, with large illuminating apparatus containing hyper-radiant lenses ranged and numbered in the order of their strength and brilliancy. Elsewhere in this department are the outfit and implements of a lighthouse keeper, his chest of tools and his working library, with photographs and paintings in oil and water colors of the lighthouses along our coasts, showing the materials of which they are built, some of timber, some of steel, others of boulders of rock, and still others resembling an old-fashioned water tower or wind-mill.

CHIEF

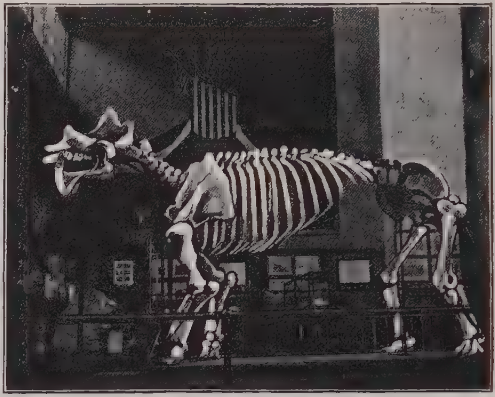
ON THE MOVE

UTE WOMAN

In the Postoffice department is first of all a branch in practical operation, connected with the main Chicago office, and not only as a distributing point for mail matter, but for the registry of letters, the issue of money orders, and the sale of stamps. An interesting feature in this connection is a combination postal car for letters and newspapers, of most recent pattern and manned with the most expert of sorters and operators. Here the entire mail gathered within the grounds of the Fair is sorted, placed in pouches and sent forth for distribution, wagons delivering and receiving the mail-bags direct from incoming and outgoing trains. The car itself is a model of workmanship, constructed by the well-known car-building firm of Wilmington, Delaware, and named the Benjamin Harrison. It is sixty feet in length with five-foot platforms at either end, painted a light cream color and handsomely upholstered and equipped, the interior finished in white ash and with furniture of maple and mahogany. Except that it is stationary this model resembles in all respects a postal car in actual service.

The working space is divided from the main lobby by a screen surmounted with glass, on which are the names of the various departments, beyond which may be partially observed the workings of the department. The service is further illustrated by a collection of uniforms, fac-similes, and models, belonging

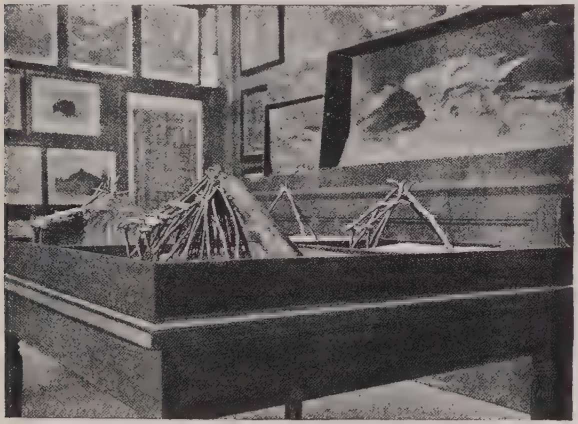
INDIAN POTTERY



MARSH'S FOSSIL MAMMOTH

to the museum of the Postoffice department at Washington. Side by side with a pony-express rider is a letter-carrier mounted on a bicycle; near to a mail-coach of antiquated pattern, which saw hard service in the Rocky mountains, and in 1877 was captured by Indians, is a miniature postal-car completely equipped, and in company with one of the old-fashioned mail steamers that plied on the Mississippi in the days of the Mexican war, is a beautiful model of the steamer *Paris*, one of the floating palaces used for the postal transport of the present day.

A feature in this department is the collection of stamps, gathered by the American Philatelic association, and dating back almost to the invention of the adhesive stamp in the office of a Dundee printer in 1834, though such were not in public use until several years later, the first in the United States bearing the date of 1841. From a few thousands issued in that year the number has increased to 700,000,000 or 800,000,000, New York alone consuming 100,000,000 a year. Of nearly all that have been used up to 1893, including those of other lands, there are samples on exhibition in the gallery, where also are the offices of employés. On the walls are portraits of all who have held office as postmaster-general, and in some of the alcoves those of presidents and justices of the supreme court.



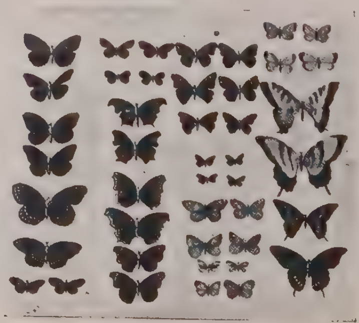
NAVAJO LODGE

INDIAN POTTERY

But to the average sight-seer the most attractive exhibits in the postal department are those which contain the unclaimed packages of the dead-letter office, for never before was such a heterogeneous assortment of odds and ends collected within so small a space. In truth it is a fitting accompaniment of an exposition intended to display all the products of soil, mine, and sea, for many of those products, including also the denizens of air, are to be found in these grotesque and strangely blended

MODEL CASA BLANCA, ARIZONA

INDIANS, COLOMBIA



SMITHSONIAN EXHIBIT

EDUCATIONAL EXIHBIT

groups. In one case is an owl perched on a human skull; in another an Indian scalp, side by side with a Chinese doll; in a third a string of battered Mongolian coins. Pistols there are of quaint and olden pattern, with knives and daggers, axes and hatchets, stuffed birds and reptiles, centipedes and tarantulas. Next to a group of bronze medals, a package of tobacco awaits its owner, and elsewhere in this postal morgue are jars filled with snakes preserved in alcohol, and flanked with bottles of whisky. On each article is placed the address, and on some the letter that accompanied it; thus, among other purposes, the Fair may serve as a means of restoring to owners some of their stray effects.

PACIFIC WALRUS

In the exhibits of the Interior department all the functions of this branch of government are clearly illustrated, its subdivisions including the Education, Land, and Census bureaus, the Patent office and the Geological survey. The display is further enriched by curiosities gathered, the world over, by John M. Ewing, as special agent, with a corps of assistants in each of the several bureaus, while to its groupings and classification, under the management of Horace A. Taylor, no exception can be taken. Of such exhibits as relate to ethnology, archæology and kindred subjects, mention will be made in a chapter specially devoted to such topics.

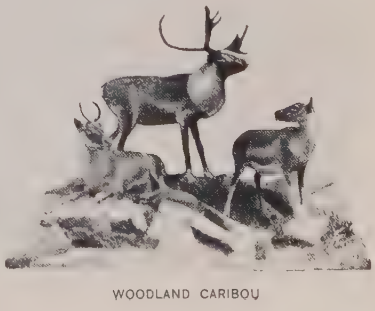
The exhibits of the bureau of education are classed in four divisions, first among which is the one relating to Records and Correspondence, including the collection, publication, and diffusion of information, with statistical charts presenting in figures and by means of graphic devices data collected from the public and other schools and colleges of the United States. In the division of International exchange is a comparative exposition of foreign educational systems.

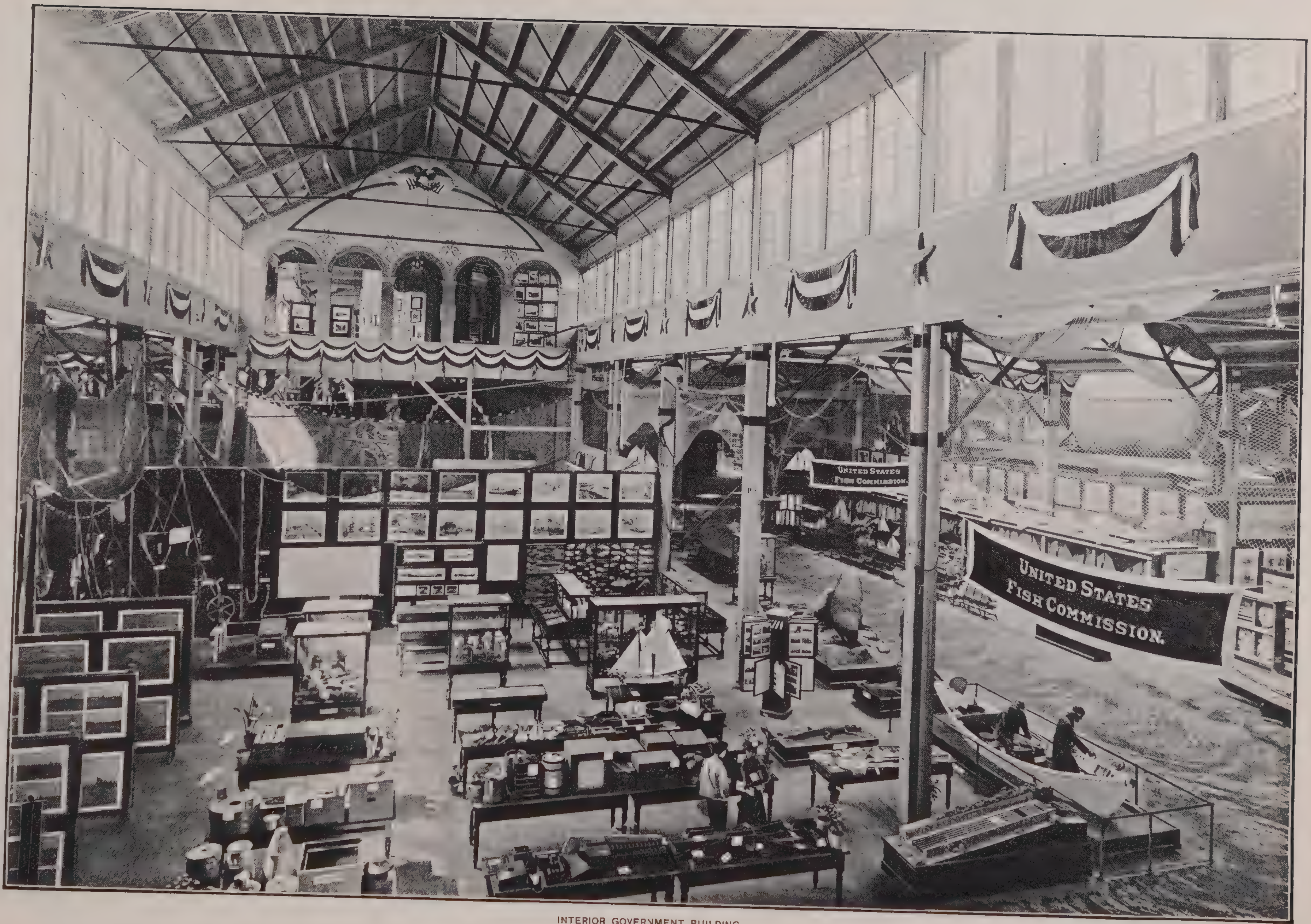
ROCKY MOUNTAIN SHEEP

In the Library and Museum, which form the third and fourth divisions, are catalogues of all the principal collections of school and college text-books in the United States. There are also samples of text-books printed during the earlier colonial period in New England, Virginia, and Pennsylvania, and opened at such pages as display the characteristics of the era in which they were published. There is a library devoted to the science of teaching, and to general instruction, where is illustrated the best system of utilizing a small collection, say of two to three thousand volumes, whether for school or other purposes. By models and charts is shown the method of administering such libraries in France, with the classes of books that are circulated and some of the results attained.

In the Museum are water-color and other paintings, with drawings, prints, photographs, and models, showing the evolution of the modern school building and grounds. Among

PACIFIC CALF SEALS


WOODLAND CARIBOU



INTERIOR GOVERNMENT BUILDING

the models are those of the primitive school-house of logs or sods, of which there are still many actual specimens extant. As exhibits of school furniture and fittings, the models of the Patent office have been borrowed for the occasion. The collection of school apparatus is devoted mainly to object teaching, and includes such as can be made by the teacher. Methods of objective teaching are also illustrated, such as are adapted to laboratories and training-schools, with experiments by teachers and students in chemistry, electricity, and other branches of science. Finally it is shown how, for a brief course of instruction, these branches may be so arranged as to obtain the best results at the smallest expenditure of time and money.

PTARMIGANS

SATIN BOWER BIRD

LONG EARED OWL

In the space devoted to the general land office are displayed the methods of obtaining government land and the process of acquiring title until confirmed by patent. On maps and charts are outlined the sections disposed of to actual settlers or remaining unoccupied at the time of their delineation, with location, character, and capabilities, whether as agricultural, pastoral, mineral, or forest lands. On the walls are copies of the actual patents whereby the government itself acquired possession, with such as were granted to the earliest settlers in several of the original states. While of practical value, the display of the land office and public land system is also an educational and historical collection. Here is presented in attractive guise a complete record of the country's progress, its various acquisitions of territory, by cession, purchase, or occupation; the surveyed and unsurveyed public lands in each state and territory and the areas granted to railroads, with their settlement and development.

MEXICAN JACANAS

DOMESTIC PIGEONS

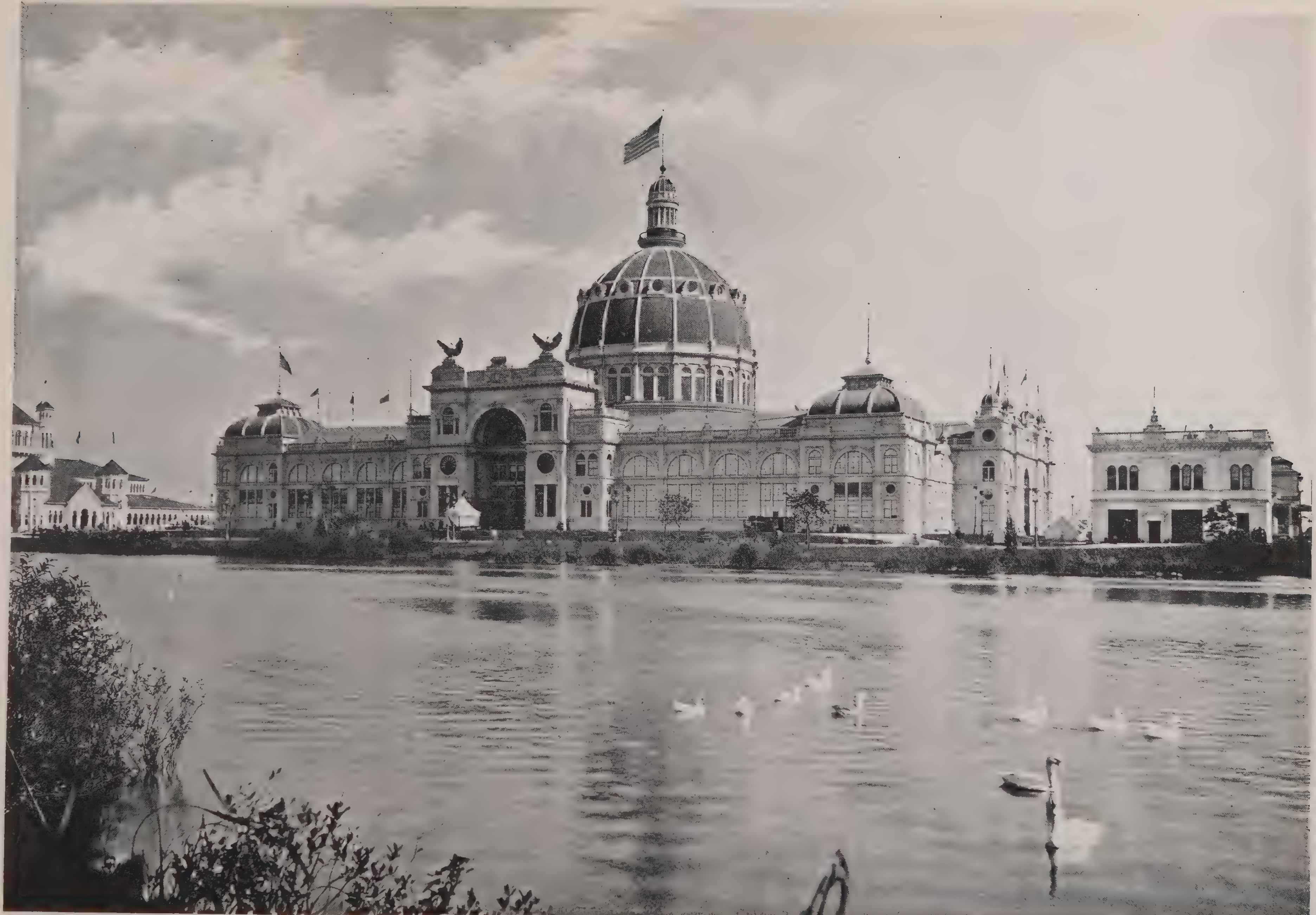
EXHIBIT, GOVERNMENT BUILDING

One of the most interesting exhibits is a mammoth terrestrial globe, probably the largest in existence, and yet with all the accuracy of delineation that science and mechanism can bestow. The globe is 63 feet in circumference, 20 in diameter, 1250 in superficial area, and mounted as it is on a star-shaped structure which serves as pedestal, 15 feet above the floor, over-tops the surrounding exhibits. On its face oceans and continents are reproduced on a scale of one and three-quarter inches to a degree, measured at the equator. The boundaries of all the countries of earth, their surfaces and subdivisions, the sites of

COOPER'S HAWK

PTARMIGAN

CALIFORNIA WOOD RATS



GOVERNMENT BUILDING FROM THE SHORES OF THE WOODED ISLAND

CENSUS BUREAU

the larger cities, the limits of ocean and of inland seas, and the courses of rivers and streams are portrayed in skilfully shaded colors and with singular fidelity. Parallels and meridians are also indicated, with zone and isothermal lines, with the principal steamship lines, and with the course of the great discoverer clearly traced, on the first of his New World voyages.

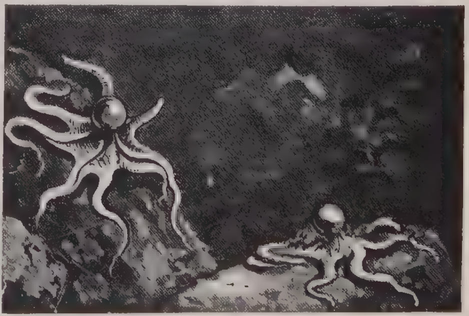
Suspended from the structure beneath are maps of Washington, Idaho, Montana, Wyoming, and the two Dakotas, the last admitted among the sisterhood of states. Entrance is afforded through several doorways, beneath a drapery of flags, in the artistic blending of which is no combination of the colors of rival nations. An interior stairway in the chamber formed by the pedestal leads to a balcony around the base of the globe, which rests on a horizontal axis, and not as the earth revolves in space, thus permitting a clearer view of the surface, which is lighted by electricity. At the lower axis, within the antarctic zone, where there is nothing to be depicted save for the shadowy outlines of Graham's land, is the apparatus for turning the globe concealed under a huge design representing the seal of the land office. Through an ingenious device the interior may be lighted by electricity, giving to the outer surface a novel and pleasing effect.

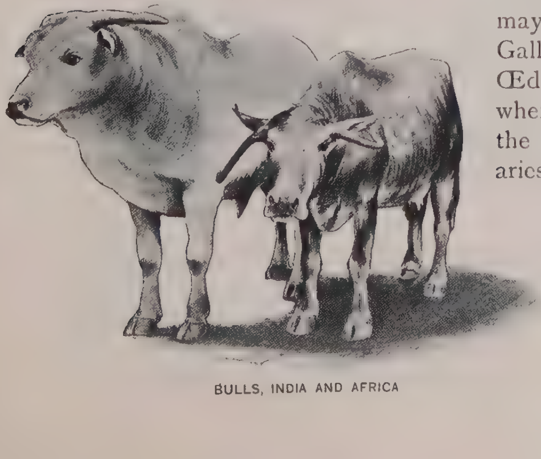
WILD CATS

LLAMA, PERU

In the space devoted to the Census bureau may be seen in actual operation the Hollerith tabulating machine, with employés of this department assigned for special duty, by whom the visitor, whose curiosity may so incline, may place on record his age, size, nationality, birthplace, and such other details as come within the province of the census taker. There is also a collection of charts and maps, showing the resources of every section of the United States and their adaptation to various branches of industry, with a long array of statistics more voluminous than reliable.

To the visitor whose tastes or faculties incline to invention the northwest portion of the Federal building is one of the most attractive spots in the home of the Fair; for here in a long array of glass cases are the models of the patent office, containing not only the leading inventions of recent date, but a historic collection, illustrating the progress of the world in this direction and especially the progress of the United States. And not alone to the man of science but to the casual visitor are these among the most interesting of all the Exposition groups, for never was gathered so rare a collection of curiosities. Here, for instance, the farmer may study the various stages of invention whereby has been evolved the modern reaping machine, up to the latest device of the McCormick pattern, and this he may compare with one of ancient Gallic construction, such as the Œdric or Helvetic may have used when disturbed at their task by the approach of Cæsar's legionaries.

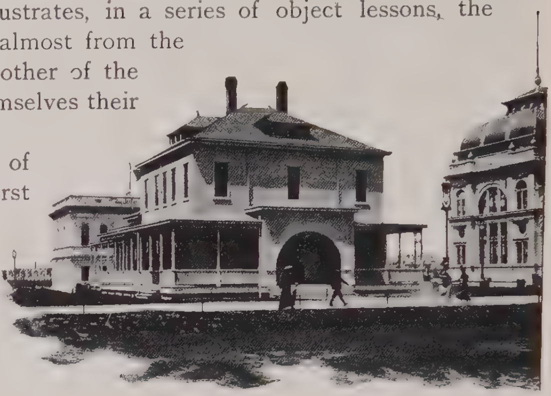

MEDITERRANEAN OCTOPUS


BULLS, INDIA AND AFRICA

From nearly a quarter of a million of models and specimens little more than 2,500 were selected for representation at the Fair; and these have been chosen with care and judgment, with a view to their practical or scientific value, and excluding all mere ingenious toys or such as would give to the display an element of the ludicrous and grotesque. To cull these exhibits from the huge collection of the patent office was a two years' task for three of its most expert

OVERLAND COACH

examiners, and, as the result, they have given us, within moderate limits, a collection which illustrates, in a series of object lessons, the history of human invention, almost from the days when the father and mother of the human race invented for themselves their rude and scant apparel.



GOVERNMENT HOSPITAL

Among the exhibits of telegraphy is displayed the first huge, unwieldy instrument for which a patent was issued, and with it, in order of date, all the principal improvements, culminating in what appears to us the well-nigh perfect instrument of to-day. In similar fashion is reproduced the history of telephones, beginning with the Bell telephone in 1876. And so with printing presses; we have first an exact reproduction of the one which Gutenberg put together near the middle of the fifteenth century; then come the more recent types of hand-presses; then cylinder presses, with all their ramifications; then, in progressive series, the web perfecting presses, and finally the Hoe press of latest pattern, such as furnishes the breakfast tables of New York with their relish of news and scandal at the rate of seventy thousand an hour.

CORAL

Somewhat to his surprise the average visitor will learn that the first type-writing machine, its patent signed by President Andrew Jackson, was invented in 1829 by one William Burt, who sold for $75 his rights for the New England states, the purchaser demanding the return of his money on the ground that the machine was unsalable. The model on exhibition is a reproduction of the original, which was burned in 1836. Though a cumbersome structure it worked fairly well, and failed only because the world was not yet ready for such an invention. There are others of later and slightly improved design, including the first one of the Remington pattern, manufactured in 1874, and thence proceeding through various gradations up to the type-writer of to-day.

MUSHROOMS

Of sewing machines there are more than a hundred models, including the originals of the Greenough machine of 1842, and the Howe machine of 1846, the latter with an antiquated fly-wheel and long-toothed plate on which the cloth was held, the latter feature being partially reproduced in the most recent of all the models, one used for sewing on looped fabrics a woven lining. From the earliest machines to those of recent make are displayed the gradual improvements in each, the latter for all the processes known to the seamstress' art. Among the spinning machines are models of the ancient distaff and spindle, of the spinning wheel of colonial days, of the spinning-jenny that Hargreaves fashioned, and the water-frame that Arkwright invented, thence traced in unbroken series to the self-acting machinery which gluts the market with an over-production of textile fabrics. And so with the looms, the most powerful of modern apparatus standing side by side in contrast with those which wove the wefts of ancient Egypt and of Rome.

PONY EXPRESS

POSTAL CAR

CARRYING THE MAIL

Of agricultural implements there is a complete and varied display, beginning with such as the Assyrians used, and including the most primitive of ploughs, shaped like a crooked stick. Here also is the first fashioned with cast-iron board, invented in 1797, but finding little favor with agriculturists, who believed it would poison the soil and kill their crops. Among those of recent make is a sulky gang-plough of the *fin de siecle* pattern, with numberless levers and springs, for which a patent was issued in 1892. Reapers, mowers, and harrows, seeders and planters, there are in abundance, with the first of what may be termed modern reapers, invented in 1799, one of 1825, and the prototype of the present McCormick reaper, manufactured in 1831.

Of steam engines there are more than two hundred varieties, and of engines for propulsion on river, ocean, and lake, nearly three hundred. Among the former is a model of Hero's globe, said to have been turned by steam more than two thousand years ago, with those of the engines invented by Papin and Savery, Newcomen and Watt, of the locomotives built by Trevethick and Stevenson, with others that have become historic, down to the Ericsson models and the cylinders and drivers of the steam leviathan constructed by Vanclair in 1891. Of electric motors the first is that of Joseph Henry, invented in 1835, and near it the original model of Faraday's induction coil, which furnished the keynote to further progress in electricity. A feature of the group is Davenport's motor of 1837, which failed only because there were as yet no dynamos for the production of electric currents. Side by side with Page's motor, used in 1854 on a locomotive running between Washington and Baltimore, are the inventions of Morse, Houston, Edison, and others known to the world of science. Telegraphs and telephones, electric lamps, and other of the manifold uses to which electricity is applied are exhibited in all varieties.

War is represented as a science by several hundred models of ordnance and other fire-arms. There are cannon of many patterns, from the wooden tubes of the Chinese to rapid-firing Hotchkiss guns, with the Dahlgren gun which, three decades ago, was among the most destructive of war's enginery. In the display of small-arms are models of the first invented, including a pyrotechnic hand weapon and the hand culverin of the middle ages, fired by a slow match. Next to them is a match-lock of the Columbian era and a wheel-lock of sixteenth century pattern, with curiously lacquered barrel, the wheel resting on a spiral spring, wound up with a key, and at the touch of the trigger revolving so rapidly as to emit a shower of sparks from a flint in contact with its circumference. This weapon was used by the Germans in 1555. Near it is the needle-gun which figured so prominently in the war of 1870. There are breech-loaders, muzzle-loaders, and hammerless fowling-pieces, with the original Henry rifle, on which all other magazine rifles are largely improvements, and there is the first Colt's revolver for which a patent was applied. All these and many other specimens are contained in a large glass case, at one end of which is an old-fashioned weapon in the form of a wooden tube covered with bamboo; at the other a Kray Jorgenson rifle, patented in 1893.

Of other models, as of boot, shoe, and screw-making machines, wood-turning, wood-working, and wood-sawing machines, wire and sheet-metal working machines, fire escapes and ladders, bridges, gates, and fences, threshing machines, knitting and netting machines, and laundry apparatus, of these and many others I need only give passing mention.

Near the north-west corner of the Government building are the quarters of the Geological survey, in the windows of which are photographic transparencies representing objects of historic interest. Under them are topographical and relief maps of every section of the United States, together with a collection of instruments used in the various surveys. Elsewhere are models in plaster of Paris representing the entire surface of the earth and the waters beneath the earth, with their underlying strata, to the greatest depths at which soundings have been taken. Of special value are those which present to us, as the result of many years of study and research, the geographical features of our own country. Here are reproduced in miniature its mountains and valleys, its lakes and rivers, its deserts and swamps, its cities and towns, and even its railroads, all with a minuteness and perfection of detail such as could never be embodied in mere verbal or graphic delineation.

FIRE CONTROLLED

In the geological and mineral groups are no less clearly revealed the strata of our rock formations, and the secrets that for unnumbered æons lay buried within. Of metals, minerals, crystals, and precious stones of commercial or scientific value, there is one of the most complete collections extant, with fossils and the flora of geology, especially its coal flora, depicting more plainly than on written page the legend of the rocks. There are sections of turquoise, several pounds in weight, extracted from the mines of New Mexico; there are garnets of phenomenal dimensions in crystalline form; there are crystals that cannot be readily detected from diamonds, taken from the clay strata of Herkimer county, New York, and there is a large and varied assortment of crystals of the calcite, cryolite, and other varieties. Of specimens and formations not included in the display there are illustrations in the form of paintings, maps and photographs, and as a further supplement to the exhibits are those of the National museum, devoted mainly to physical geology.

In the various exhibits is represented the entire work of the survey, whether in the field or in the office, elucidating by carefully selected specimens the geology and mineralogy of the United States. The fossil collections are so arranged as to show their original locations and their order in the geological column. Prominent among them is the huge skeleton of an antediluvian pachyderm, fourteen feet long and eleven in height, unearthed in what are known as the bad lands of Dakota. Elsewhere is a fossil horn more than four feet in length taken from a mollusk of the ammonite family, with other ammonite and trilobite specimens, entire or in parts. There is also a large group of the coral-building crustacea commonly known as stone lilies, so called on account of their close resemblance to water lilies.

By the bureau of Indian affairs, as a branch of the Interior department, a building was erected near the Krupp pavilion and the convent of La Rabida, reproducing, as far as possible, the reservation boarding-school, the walls of its chambers decorated with articles of Indian manufacture, and the windows partly composed of transparencies depicturing Indian customs and modes of life, with collections of photographs for similar purposes and portraits of prominent chieftains. There are workshops, school, sitting and dining rooms, dormitories, and kitchen, with apartments for employés, and here may be seen, under charge of instructors, boys and girls, studying or reciting, working at trades, or preparing their meals, all as though actually living on reservations, with specimens of their self-taught industries compared with those of civilized nations, and with the methods adopted and the results accomplished. The pupils and teachers were selected from a large number of Indian schools, not only government schools, but such as are conducted by the several religious denominations, each furnishing its quota, and giving place to others after a brief sojourn. Thus are extended to a large number of Indian boys and girls the educational advantages of the Fair, and to visitors a complete exposition of the training afforded by government and other agencies at widely scattered points.

WATER UNCONTROLLED

Finally should be mentioned in connection with the department of the Interior, its Alaskan exhibit, housed in the northern gallery of the Government building, one fully illustrating the resources of that much abused territory, and more than justifying the well-known remark that Seward made, some few years after its purchase. "What, Mr Seward," asked one of his admirers, "do you consider the crowning act of your political career?" "The purchase of Alaska," he replied, "but it will take the people a generation to find it out." And now that a generation has well-nigh passed away, the people are beginning to realize her natural wealth, not only in land and pelagic peltry, but in fisheries, forests, and mines, the first making good the decreasing output of the Columbia river canneries, the second with timber of many varieties and in unlimited supply, the third containing, in addition to valuable placers, gold-bearing quartz-veins, which may yet go far to reëstablish the equilibrium in the value of the precious metals.

For more than a year G. T. Emmons, as special agent, was engaged in preparing this display, and as the result has presented a most attractive and interesting collection, including many curiosities never before given to the public. Among them is a war canoe, grotesquely painted, the sleds of the Thlinkeet and other tribes, their trophies and totem poles, and there is the most complete assortment of furs ever placed on exhibition. In the Thlinkeet, or as the government spells the word, Tlingit collection, are exhibits of rare interest to the casual visitor no less than to the ethnologist. In one case is the most complete assortment of furs ever placed on exposition; in another a collection of festival and ceremonial pipes; in a third of head-dresses, robes, and blankets; in a fourth of weapons and household and fishing implements; in a fifth, of charms and ornaments. Adjoining them are cases containing the household and fishing implements and clothing of the Eskimos. As specimens of Alaskan timber, there are sections of spruce, cedar, alder, and hemlock. The mineral group includes a piece of quartz from the Treadwell gold mine on Douglas island, with gilded bars representing in fac-simile its output of $676,226 for 1892. Finally, there are studies of Alaska in graphic art, in a collection loaned by T. J. Richardson.

SEAL OF LAND OFFICE

In the main gallery are displayed, as may be read on its canvas signs, the resources, industries, commerce, and customs of Mexico, Central and South America, and the West Indies. Here is the picture gallery of the Federal pavilion, where may be studied, in a series of excellent illustrations, the more striking physical features, the farms and factories, the traffic and means of communication, the cities, homes, and home-life of many nations, with portraits of their more eminent men. In cases containing textile and other fabrics are copies of a work entitled the *Special Exposition Bulletin*, issued by the bureau of American republics, and, as it states, showing how Latin American markets may be reached by manufacturers. Among other curiosities are fac-similes of the Peruvian, Bolivian, and Argentinian declarations of independence and a collection of paintings in water color by an Amayara Indian of Bolivia. Elsewhere are llamas, guanacos, and burros, the last in a mounted group, side by side with a pack-mule and a yoke of oxen. A relief map of Central and South America shows the proposed line of an Intercontinental railroad and of existing railway and steamship lines, with a vertical scale of about one inch to the mile and a horizontal scale of an inch to twenty-five miles, measured on the equator.

Descending from the gallery, whence we found an excellent view of the departments below, and especially of the rotunda, with its mural decorations, let us enter the Fisheries branch, for which, with the aid of an appropriation of $89,000, preparations were begun in the spring of 1891. Collections were placed in a building rented by the Fish commission in Washington, and a corps of assistants was employed in preparing the exhibits for packing. In December 1892 eight car-loads were housed in the federal building, and before the middle of March twelve additional car-loads were landed in Chicago. In the closing days of the latter month the work of instalation was begun, and by the first of May completed. As the result we have a most interesting and instructive display, occupying 15,000 square feet in the northern corridor and the naves adjacent, between the spaces allotted to the departments of the Interior and of Agriculture.

Says the manager of the Fisheries department: "The object of our exhibits is to illustrate the functions, methods, and operations of the United States fish commission in its three divisions of scientific inquiry, fisheries, and pisciculture." The collections are largely drawn from the fisheries section of the national museum, where most of them were deposited by the commission, after doing duty at former expositions; but much of the material is the property of the museum itself.

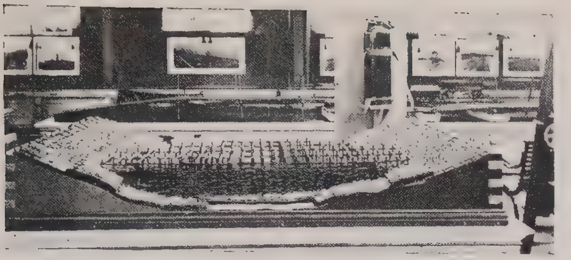
As illustrations of the scientific work of the commission, there are models and photographs of its aërological stations for marine exploration and of its vessels, the *Albatross*, *Fish Hawk*, and *Grampus*. Together with apparatus for deep-sea soundings and thermometers and salimometers for physical observations are sectional charts of ocean's bed, relief models of submarine continental slopes, and specimens, dried or in alcohol, of mollusks, polypi, and other denizens of surface and deep waters, including, corals and foraminifera, crinoidea, star-fish, and sea-urchins, the last of which is classed as an edible specimen, though one would prefer to have fresh on table the lobsters, crabs, shrimps, or oysters that form a part of the collection. Of seines, trawls, towing-nets, dredges, sieves, and other such articles as were used in making and preserving this collection, there is also a plentiful display. Nor should we omit the groups which show the development of pisciculture as a branch of economic science.

The division of fisheries is subdivided into objects or groups of specimens, apparatus, illustrations, and statistics. In the first are included, among other mammals, the common and bottle-nosed dolphin, the grampus, porpoise, and sperm-whale, the common and fur-seal, and the sea-lion, the last three mounted on frames and the others in the form of casts. Of reptilia and batrachians there are the alligator, or rather his skin; turtles, green, soft-shelled, snap, and spotted; tortoises of several descriptions, and snakes and frogs, some in the form of painted casts and others represented by their shells. But most of the fish exhibit proper is to be found in the annex of the Fisheries building, the living specimens in its aquaria and others in various forms of illustration. Of these a description will be given in connection with the Fisheries department.

UNITED STATES MINT EXHIBIT

Under the heading of apparatus are classed fishing vessels of all descriptions, from a steam-whaler to a skin or bark canoe. Of the smaller craft there are many actual reproductions, and of the larger, models and pictures, with improved and recent types, their instruments of navigation, their rigging and equipments. For the taking of fish there are casting and towing nets, trawls and dredges, the lines, rods, reels, flies, floats, and sinkers of the angler and the deep-sea fisherman; and the spears and lances, or missile weapons used in whaling and sealing, or by Indian tribes, as the Aleuts and Eskimos for supplying themselves with food. Among the collection of rods is one valued at $2,000, manufactured by the New York firm of Abbey & Imbrie for the Queen's Jubilee Exposition, as a specimen of the most finished workmanship. It is mounted in gold, engraved with designs of artistic merit, in its butt a topaz which cost $1,200, and its reel of solid gold, with handle of agate.

In addition to the models, casts and pictures already mentioned, the Fisheries department is further illustrated by a collection of many hundreds of color-sketches, paintings, and enlarged photographs, representing


MODEL IN GOVERNMENT DEPARTMENT

not only classes and specimens, but the dwellings of fishermen, their mode of life, and the villages and towns supported mainly by this industry. Statistics are presented in the form of charts and in the publications of the Fish commission, beginning with its organization in 1871. Those who incline to this class of literature will find here no lack of material; for in one of the cases are some twenty volumes of *Annual Report*, each of nearly 1,000 pages, ten volumes of its *Annual Bulletin*, with 5,000 pages in all, the quarto series in connection with the tenth census, and special treatises and reports on scientific investigation and research.

GROUP ON ADMINISTRATION BUILDING

As an example of what has been accomplished in the way of pisciculture, it will be seen on one of the charts in this section that, between 1872 and 1892, the commission distributed 2,732,486,387 fish. Of the economic value of its work a single instance must here suffice. In 1880 some 29,000,000 shad were distributed among the inland waters of the United States and more than 5,000,000 were caught, while for 1890 the take was little short of 13,000,000; yet for the former year the catch was valued at nearly $1,000,000 and for the latter at about $800,000, showing a decrease of 69 per cent in price in relation to volume of production, and with an actual reduction of 40 per cent in retail markets, thus bringing this favorite food-fish within reach of the most slender purse.

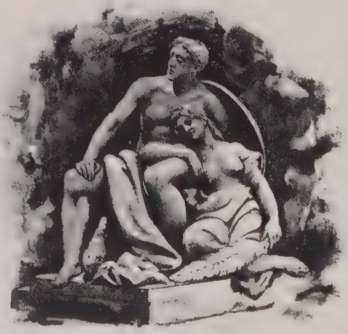
Among the exhibits are all the apparatus for collecting, preserving, and hatching ova, and for the preservation of fish in various stages of growth, including such as are or have been used, not only by the commission, but at other piscicultural stations in our own and foreign lands, thus affording a practical illustration of the science from its very inception. Of hatching houses there are many models, with pictures on a scale representing their structural design, their methods and appliances, together with floating stations in actual operation. In a word, fish propagation may here be studied, whether from a commercial or scientific point of view, extending over the entire region between Maine and Oregon, and thence southward to the state of Missouri.

Methods and results are further illustrated by figures in clay, showing the mode of capturing shad and cod, and by a chart the system of collecting their eggs. The growth of fish reared by the commission, as the trout, white-fish, carp, tench, gold-fish, bass, and many others, is indicated by painted casts. In another group are ova in various stages of development, with specimens, preserved in brine and alcohol, from the smallest of fry to the full-grown fish. In still another are models and photographs of water-ways, showing how fish are assisted in passing the obstructions of river and stream, with other appliances for their protection.

As with the Fisheries, so with the Agricultural department of the government display, it is intended to illustrate the functions, scope, and methods, with the results achieved in each of its subdivisions. While largely of a scientific and educational character, as are most of the government exhibits, it is not entirely so, and few there are among the more intelligent class of observers who fail to recognize its attractive and artistic features.

Entering from the central rotunda our national hall of agriculture, veiled by a screen of symbolic and most tasteful design, the visitor finds abundant evidence that the $150,000 and 23,000 feet of space appropriated for its purposes have been utilized to good advantage. Under the personal supervision of Edward Willits, assistant secretary of his department at Washington and chairman of the government board of control, there have been gathered and installed probably the most complete and yet the most compact collections ever brought together. An agricultural display like that of the main Agricultural department of the Fair, it was not intended to be. Nevertheless there are choice exhibits of cereals, cotton, tobacco, and wool, procured by agents specially appointed for their task, mainly with a view to illustrate the effect of soil and climate on the several products on view. Samples of wheat, barley, oats, rye, corn, and buckwheat, culled from every section of the United States, are accompanied with sufficient data to afford a comparison of each variety and to indicate the most suitable habitat for each. Of cotton there are numerous specimens, carefully chosen and skilfully arranged, showing how this industry has been and yet may be improved. Tobacco is shown in every form and variety in which it is raised, and among other exhibits is one in bulk, as removed from the hogshead which contained it. Samples of wool, including many foreign descriptions, are

NATURAL HISTORY GROUP


STRENGTH, ADMINISTRATION BUILDING

placed in large glass jars, and beside them are fleeces in pyramidal form. Thus the wool-grower or wool-merchant may compare the relative merits of nearly all merchantable classes and grades.

The bureau of Animal Industry has furnished an excellent display, happily combining the scientific with the popular. Sides of beef and an entire hog in papier maché illustrate the process of dressing and preparing for market. The spread of pleuro-pneumonia, the world over, is traced on a globe, where its progress is indicated before and after it reached our shores. The method of inspecting pork to detect the presence of trichina is shown by men detailed for that purpose. Of pathological specimens in alcohol there is a large collection, and the diseases of domestic animals may be studied in the form of models, together with such of the bacteria as are destructive to brute and human life. In other models are displayed some of the most recent patterns of cattle cars and vessels, constructed with due consideration for the care of live-stock in transit. There are also horse-shoes on exhibition, showing approved and faulty methods of shoeing and the manner in which are shod the champions of the turf.

In another section of the Agricultural department are exhibits of practical chemistry, with a working laboratory showing the most recent appliances for the analysis of food constituents, for detecting adulterations, and other useful purposes. The cultivation of sugar-beets and the manufacture of beet-sugar are features of interest, and the machinery and apparatus used in this connection are models of their kind.

CARAVELS AT THE FAIR

In the Botanical division is a herbarium case, where are mounted and labeled specimens of most of the plants indigenous to the United States, and in bottles a large collection of medicinal plants. There is also a comparative display of grasses, whether serving for food or for manufacturing purposes, and out-door groups of such plants as are found in the desert regions of the south-western states. In this connection may be mentioned the Entomological collection in which are included injurious species of insects, insect-destroying substances and apparatus, systematic and biological classes, appliances and methods for collecting and rearing insects, and illustrations and maps. By models are illustrated the depredations wrought by insects on various species of plants, and that with such fidelity of detail that the spectator might suppose himself looking on the plant itself. In a heap of corn are shown the ravages of the boll-worm and other pests, in the potato, tomato, tobacco, and other plants those of the insects called by their name. Finally there is a choice exhibit of mounted specimens, including South American varieties, their brilliant colors blended in most artistic fashion.

Of fruit there is a large collection in the shape of wax models, and here is an excellent opportunity for the comparison of different species and specimens, such as are adapted to the various fruit-growing regions of the United States. Side by side with these groups are several hundred kinds of nuts, indigenous, transplanted, and foreign, from the Florida cocoa-nut to the almond and Persian walnut—more commonly termed the English walnut—of California. In the so-called division of Microscopy is a large collection of edible and poisonous fungi, with mushrooms displayed in life-like colorings. Here are illustrated the operations of the administrative department in connection with experiment stations, the workings of the stations themselves being displayed in the main Agricultural department of the Fair, and described in that connection.

In the Forestry section are the tops of the long-leafed or southern pitch-pine, with its trunks and seedlings in various stages of growth, and with its several products, including all grades of crude and refined turpentine and rosins, the specimens arranged in columnar form representing a section of the tree. Suspended from the trees are the various tools employed in this industry. There are also native and foreign finishing woods in a pagoda containing columns of such woods, handsomely carved and veneered, and there is a large octagonal column filled with seeds from the various trees indigenous to the United States, around its broad and terraced base a group of living conifers. Another attractive feature is a series of monographs, framed with sections cut from the trunks of various species, and illustrated by means of botanical specimens, with maps and photomicrographs showing geographical distribution. In the form of screens are more than two hundred specimens of botanic forest growth, in conjunction with as many sections of the trees among which they are found, and also with charts of distribution and annotations of interest.

In the herbarium is a complete collection, including more than 200 specimens, of the leaves and timber of all trees of commercial value indigenous to the United States. An instructive exhibit is in the form of large square cases, their framework of elm, birch, cherry, maple, oak, spruce, ash, cypress, walnut, and hickory, and inclosing polished panels, fashioned of native varieties. A small pavillion is set apart for railroad ties, of wood and metal, the Central Pacific sending one of red fir and the Southern Pacific one of black redwood, to show how they have been preserved in serviceable condition after the hard usage of a quarter of a century. But perhaps the most unique exhibit of all, and one that is specially appropriate to this year of Columbian celebrations, is a disk of highly polished wood containing a series of rings which reveal, as clearly as on written page, that, in the Columbian era, the tree of which it is a section must have been a seedling, all unconscious of the great future which lay before it. On each series, indicating a decade's growth, are described the leading historic events of the corresponding period.

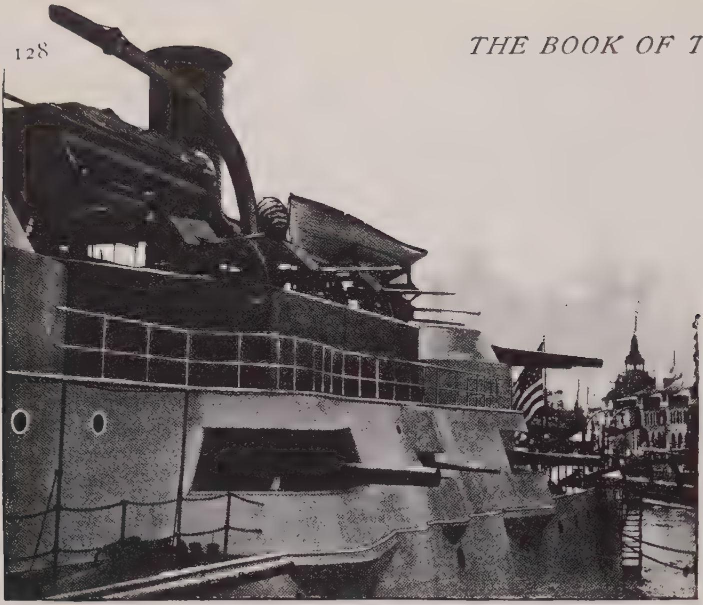
Still another interesting exhibit among the Forestry groups is a model of a recently invented machine for the planting of trees, whereby as many as 35,000 cuttings have been planted on unbroken prairie-land in a single day. The timber tests conducted by the Forestry department are also shown, with the methods of applying strains. In the corner occupied by the office of fibre investigations are arranged in boxes sisal and other hemps, flax, jute, ramie, and the fibres of the pine-apple. Among the exhibits of hemp are twines and cordage, and among those of flax, the straw in its natural state, as well as dressed and manufactured, with a spinning-wheel more than a century old. Finally in the section of vegetable pathology are illustrated in models or actual specimens, such fungous diseases as the pear blight, and the mildew of the grape, with materials and methods for their extermination.

In the division of ornithology and mammalogy are shown the economic relations of birds and mammals to agriculture, with their geographic distribution. Here, for the first time, are displayed the collections gathered in the Death valley expedition of 1891, under the direction of this bureau. The groups are skilfully mounted and arranged, and among them is one representing the fauna and flora of a mountain slope, as seen by him who climbs the mountain's side.

For those whose tastes incline to this class of literature there is a complete collection of the publications of the Agricultural department, with statistical chart and maps relating to all the agricultural products of the United States, including their distribution and their prices for a series of years.

Of the Naval exhibit some description may here be added to the slight mention already made of this interesting feature. In the model *Illinois*, whereby this department is represented, we have somewhat of a novelty in naval architecture—a vessel of war whose hull, from berth to main deck, is of brick and concrete, covered with a coating of cement, and resting on a foundation of piles. The ship is armed, manned, and equipped, and there are quarters and mess-rooms for officers and men, with drill and dress parade, all in such realistic fashion that, by the uninitiated, the vessel might easily be mistaken for an iron-clad moored alongside the wharf in front of the government plaza.

The *Illinois* is a model of our coast-line battle-ships of the latest pattern, such vessels as the *Oregon* and *Massachusetts*. She is 350 feet in length, with a beam of 70 feet, and were she an actual man-of-war, would be of about 10,000 tons, with engines of 9,000 horse-power and a speed of some 18 knots an hour. Her full complement of officers and men would be about 450, those now on board belonging to the marine corps and the war-ship Michigan. As to her armament, there are first of all, on the main deck, fore and aft armor-plated turrets, with thirteen-inch breech-loading guns, almost as harmless as those which the Chinese used in the fifteenth century, and made, like theirs, of wood, wrapped and covered with cement. Pointing fore and aft are six-inch breech-loading rifles, mounted in sponsons projecting above water line. On the excursion deck the batteries consist of eight-inch also mounted in turrets. The armament includes, besides, Gatling and other rapid-firing guns, in all some fifty pieces of ordnance, large and small, and with six torpedo tubes. The lighter cannon are of real workmanship, and were forwarded from the naval gun factory with carriages and equipments as though for actual service. From the forward section of the upper deck rises a hollow iron tower, or as it is termed, a military mast, around which, at the forward end of the bridge, is the chart house, and above it platforms, or tops, for sharpshooters and quick-firing guns. Above the tower is a flagstaff for signalling purposes. In the conning tower, where is the commander's station in time of action, are electric and other appliances, as call-bells and speaking-tubes such as are needed for handling a ship to the best advantage. On either side of the bridge are hung the boats, eleven in number, with two steam launches, all of which are real and serviceable



NAVAL EXHIBIT

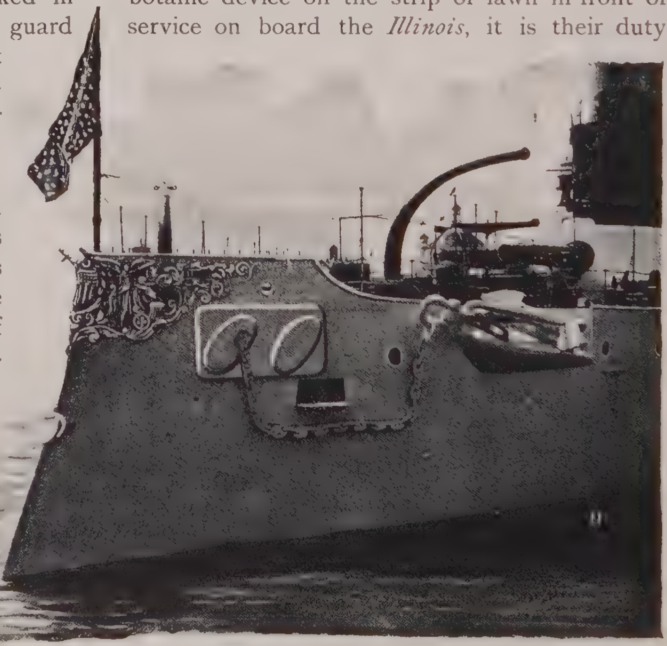
craft. The starboard side is protected by a torpedo netting of spars, which at times is displayed in actual operation, as also are the several uses of electric lights for naval purposes.

But for a view of the most interesting exhibits on board the *Illinois* we must descend to her lower deck, where, between the sailors' and officers' quarters in the fore and aft compartments, a large space is devoted to a hydrographic display, illustrating the process of marine surveying and deep sea soundings, to that of the naval academy, to the departments of the surgeon-general and paymaster, and to a collection of such engines, apparatus, and tools as are commonly used on board our vessels of war. Beneath the forward turret is the magazine, from which ammunition is hoisted by hydraulic power, and almost under the vessel's bow is a railed inclosure where those who are curious as to such processes may watch at leisure the loading of torpedoes. On this deck also are the mess-rooms, the store-rooms, and the cook's galley, men and officers living as though on actual service and under similar discipline. Finally there are portraits of naval heroes, from the days of Paul Jones to those of Admiral Porter, and there are models of war-vessels of all ages and descriptions, from the war-canoe of the savage and the trireme of the Greek to the wooden three-deckers that fought at Trafalgar and the steel-clad cruisers of our own white squadron.

The builder of the *Illinois* was the naval architect, F. W. Grogan, and to Commodore R. W. Meade of the navy department is due the project of a naval exhibit. On the decks of this model is an opportunity for the visitor who dwells remote from seaport towns to study the organism of the navy now in course of construction, and intended to give to the United States her proper rank among the maritime powers of the world. As yet we have merely the nucleus of a navy, and that consisting almost entirely of the iron and steel-plated cruisers, coast-defense, and line-of-battle ships constructed within recent years; for, in the relics of the civil war—a few small armored vessels and antiquated specimens of naval architecture—we had nothing on which to rely in case of need. To no purpose could the treasury surplus have been better applied than in providing such means of protection for our commerce and our coasts, and few there are who will grudge the expense of adding to our navy, though at an average cost of some $3,000,000 each, at least two or three vessels a year, such as those represented by the *Illinois*. Doubtless the ship of which she is a model would, on occasion, render a good account of herself; but as yet there is not in the entire fleet a single man-of-war that would be a match for the first-class ironclads of England, Italy, or France.

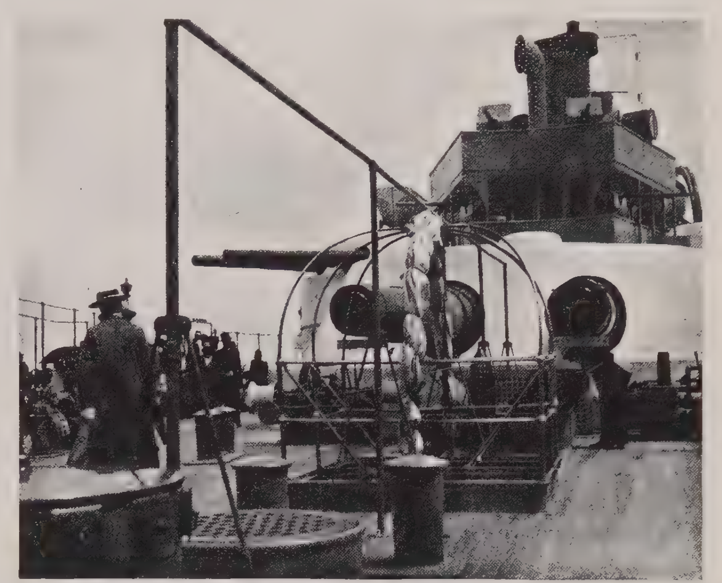
A short distance inland from the wharf where lies the *Illinois* is the camp of the marine corps, whose location is revealed by the letters U. S. M. C. worked in botanic device on the strip of lawn in front of its neat and orderly array of tents. In addition to guard service on board the *Illinois*, it is their duty to protect certain of the exhibits in the Government building, and especially the more valuable public documents, some of them among the most precious of our national heirlooms.

Of the life-saving station, adjacent to the camp, brief mention has been made in connection with Exposition management. Within or in front of this two-story structure are life-boats and other appliances for the rescue of those whom accident overtakes in lake or waterway. Among them is a beautiful specimen of such craft, built of mahogany and in air-tight compartments. To one side of the building is attached the first life car ever used on our Atlantic seaboard, whereby, from the wreck of the *Ayrshire* on the New Jersey coast, in 1850, were rescued her crew and passengers, all save one, who, fearing to wait his turn, clung to the outside of the car and was washed away. Here also are the mortar and cannon-ball used to cast on board the life-line, the latter found, a quarter of



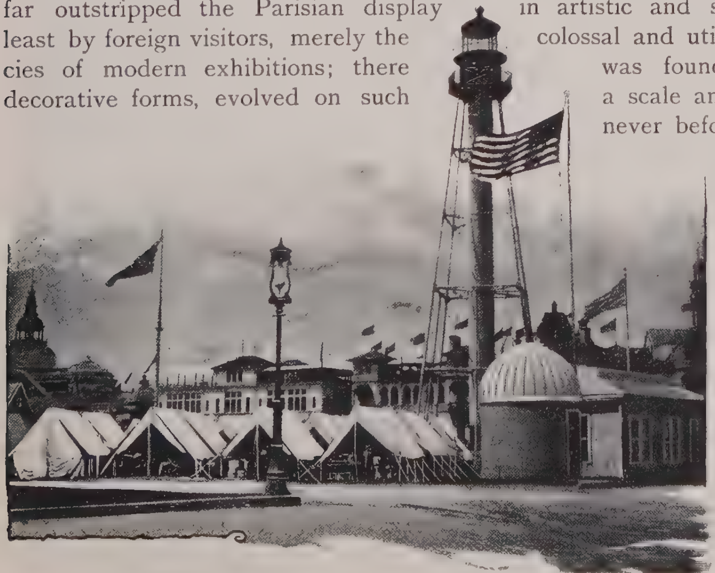
PROW OF THE "ILLINOIS"

a century later, in the hold of the vessel. Both have become historic and form a part of the collection loaned by the Smithsonian institution, where is their home. The life-saving station is one of the Fair buildings, small though it be, that is intended for permanent use. Near it is a lighthouse of modern design, with framework of steel and about 100 feet in height. Its revolving light is of the first magnitude and with the most powerful of reflectors. After the close of the Fair it was to be taken apart in sections and shipped to the mouth of the Columbia river, a point more dreaded by mariners than any other on the Pacific coast. Next to the lighthouse, on the government esplanade, are the three small wooden buildings in which is contained the naval observatory, with its equatorial and transit telescopes, and an interesting collection of chronometers that have seen hard service in Arctic and other lands. Of such as are of historic interest mention is made under the heading of World's Fair Miscellany. Here, under the direction of F. T. Gardner, a time-ball is made to drop from the flag-staff of the Federal building precisely at noon by Washington time, or at about eleven o'clock as time is in Chicago.


GUN DECK "ILLINOIS"

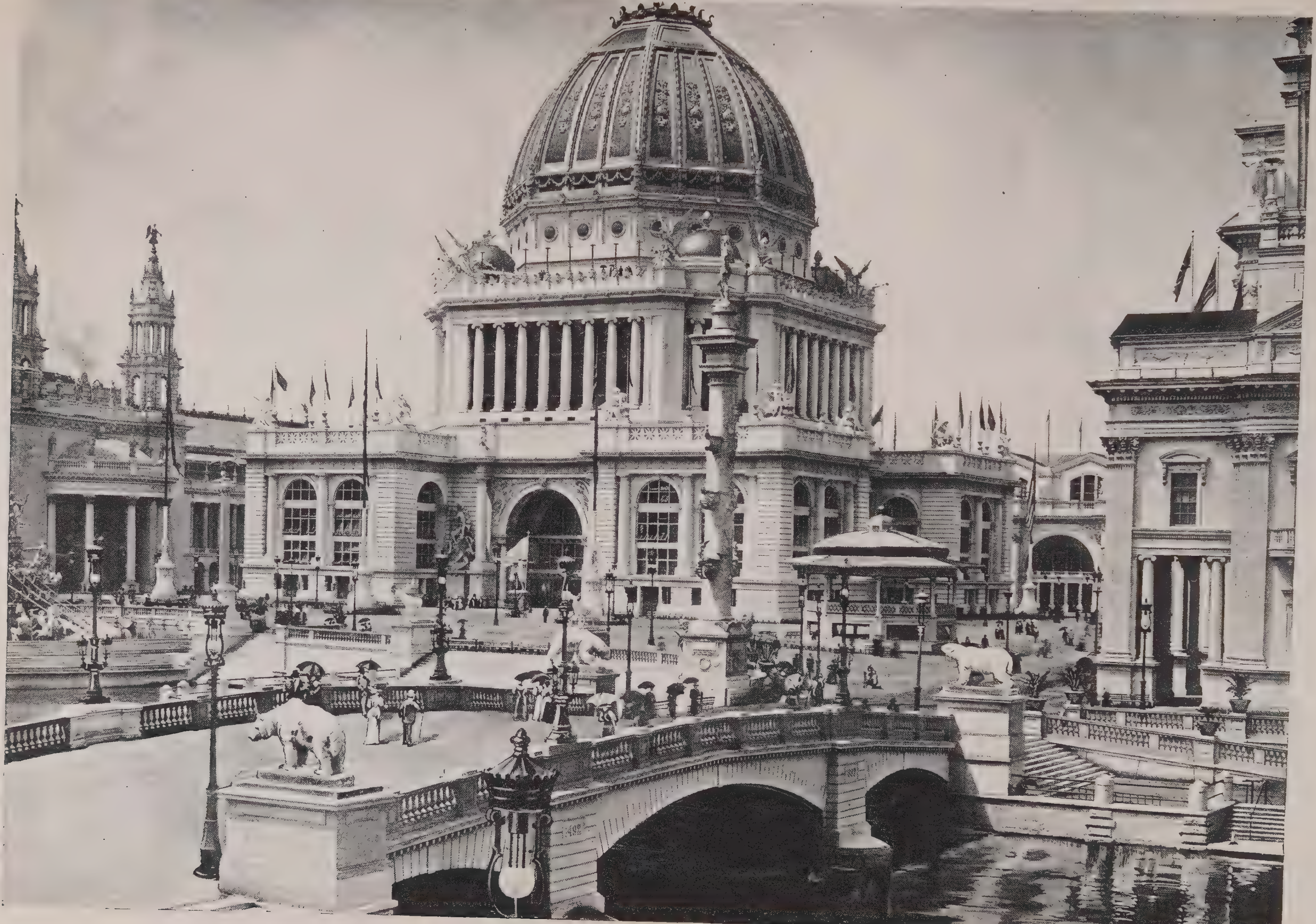
To this group of minor departments belongs also the Weather bureau, classed under the agricultural section of the government exhibits. Thoroughly equipped and with the most approved and recent of meteorological instruments, it is almost a reproduction of the system in use at the national capital. From cipher telegrams, announcing weather conditions throughout the United States and Canada, forecasts are made by the officers precisely as in Washington. In the upper story of this neat and unpretentious building, short lectures are delivered on meteorology, illustrated by a stereopticon, and here may be had lithographic weather maps prepared each day from the current reports, on the back of which are described the elementary processes in the science of weather forecasting. On the roof is a shelter-house containing the thermometers, the apparatus for recording rainfall and sunshine, and the flag-staffs for the display of wind and weather signals.

From the national administration let us turn to the administration of the Fair, though in the latter department there are no exhibits, properly so-called, except for the building itself, which has justly been termed "the crown of the Exposition palaces." When, by a member of a foreign legation, the remark was made, already quoted in these pages, that "the Chicago buildings are what we expected to see in Paris, and those of the Paris Exhibition what we should have expected to see in Chicago," his meaning was probably somewhat as follows. In Paris, the home of art, the architects of the last of her great World's Fairs gave little more than commonplace effects, with an eye rather to convenience than structural beauty, while Chicago, the acknowledged type of industrial progress, but where as her rivals said, art found no abiding place, has far outstripped the Parisian display in artistic and scenic design. From the latter was expected, at least by foreign visitors, merely the colossal and utilitarian style of treatment developed by the exigencies of modern exhibitions; there was found instead the most refined and harmonious of decorative forms, evolved on such a scale and with such skill and taste as in its entirety has never before been witnessed in Exposition architecture.


SIGNAL SERVICE STATION

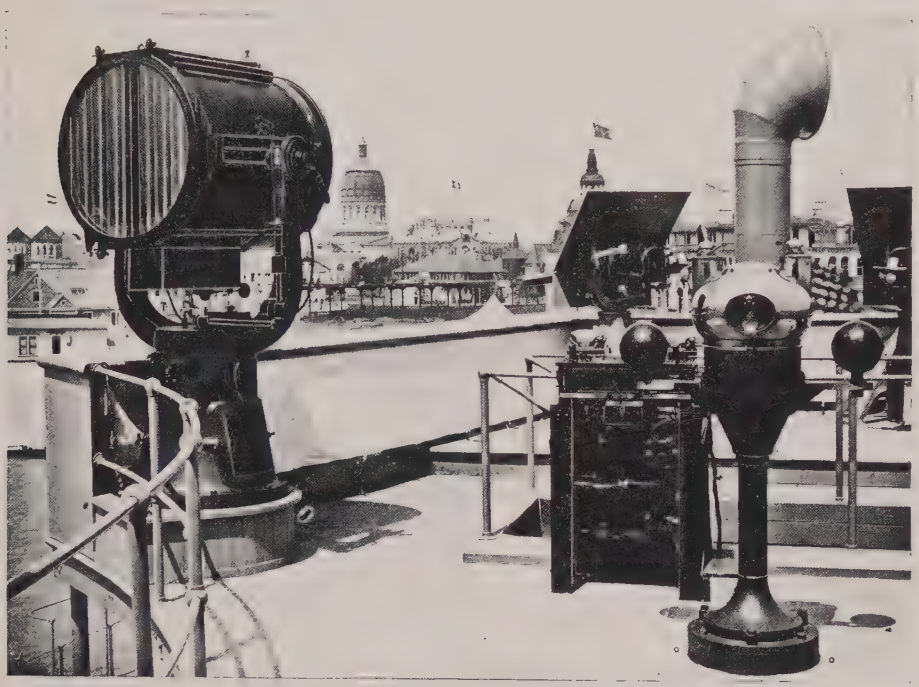
While in the five great structures that surround the main court we have the most striking of all the architectural effects, nowhere do we find among them more perfect elaboration and harmony of composition than in the Administration building. Yet in none of the larger edifices were their structural problems more difficult of solution; for, adjacent as it is with the railroad terminus, here is the principal entrance-way to the grounds, and through its porches, through its spacious and majestic interior, the visitor may pass into the fullness of glory revealed by the city of the Fair.

Covering an area in the form of a square, whose side is 260 feet, the first floor consists in part of four exterior pavillions in the form of



ADMINISTRATION BUILDING. EAST FRONT

wings, of equal size, one at each angle of the square, and in the centre of their facades a wide recess, where are the grand entrances, flanked with emblematic statuary. These are of the Doric order, with flat terraced roofs, surrounded with balustrades, and adorned with statuary at their outer corners. In the interior of the building is a rotunda of octagonal shape, forming the principal motif of the plan, its arched walls surmounted with a frieze nearly thirty feet wide, and covered with sculptures in low relief. Within this hall neither nave nor transept interferes with the unity of the composition, nor is there anything to obstruct the view from the floor to the overhanging dome.



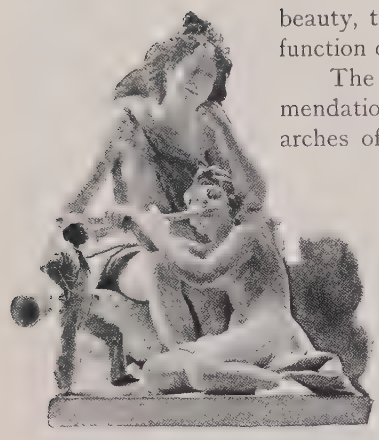
SEARCH LIGHT DECK OF "ILLINOIS"

On the second story the octagonal structure rises above the pavillions, standing forth boldly against the sky, and asserting itself as the dominating feature of the design. With a height of some fifty feet, this story is of the Ionic order, and with an open colonnade on each of its faces, the pillars of which are forty feet high and four in diameter. Above the pavillion, and resting on the floor of the gallery in which the story ends, are domes flanked with the heroic statuary in which the artists of the Fair delight. From this floor rises the base of the central dome, which is thence continued in soaring lines to the apex, towering far above the loftiest of the adjacent temples, its gilded surface displaying, for a radius of two-score miles, the location of this monumental vestibule of the Exposition.

In structure this dome resembles, as I have said, that of the Invalides, but is more than forty feet higher, and more than fifty above that of the national capitol. In diameter it is larger than any that have yet been fashioned, with the single exception of the dome of St Peter's. Within it is an interior dome, nearly 100 feet less in altitude, and at its apex an opening fifty feet wide, through which the vault above appears like the concave arch of another sky. Thus light is admitted to the great rotunda, while its inner ceiling is not so lofty as to impair the architectural effect.

FRESCO, DOME ADMINISTRATION BUILDING

The Administration hall was intrusted to Richard M. Hunt, with whom in former years were associated, as pupils or assistants, several of the Fair artificers. Says one who has made a thorough study of his design, and of the plans on which all the main buildings were formulated: "In his decorative treatment of the problems thus evolved Mr Hunt has exercised a fine spirit of scholarly reserve. The architectural language employed is simple and stately, and the composition as a whole is so free from complications, its structural articulations are so frankly accentuated, that it is easy to read, and, being read, cannot fail to surprise the most unaccustomed mind with a distinct and veritable architectural impression. We have said that this edifice was intended to introduce the visitors to the Exposition into a new world. As they emerge from its east archway and enter the court, they must, if possible, receive a memorable impression of architectural harmony on a vast scale. To this end the forums, basilicas, and baths of the Roman empire, the villas and gardens of the princes of the Italian renaissance, the royal court-yards of the palaces of France and Spain, must yield to the architects, 'in that new world which is the old,' their rich inheritance of ordered



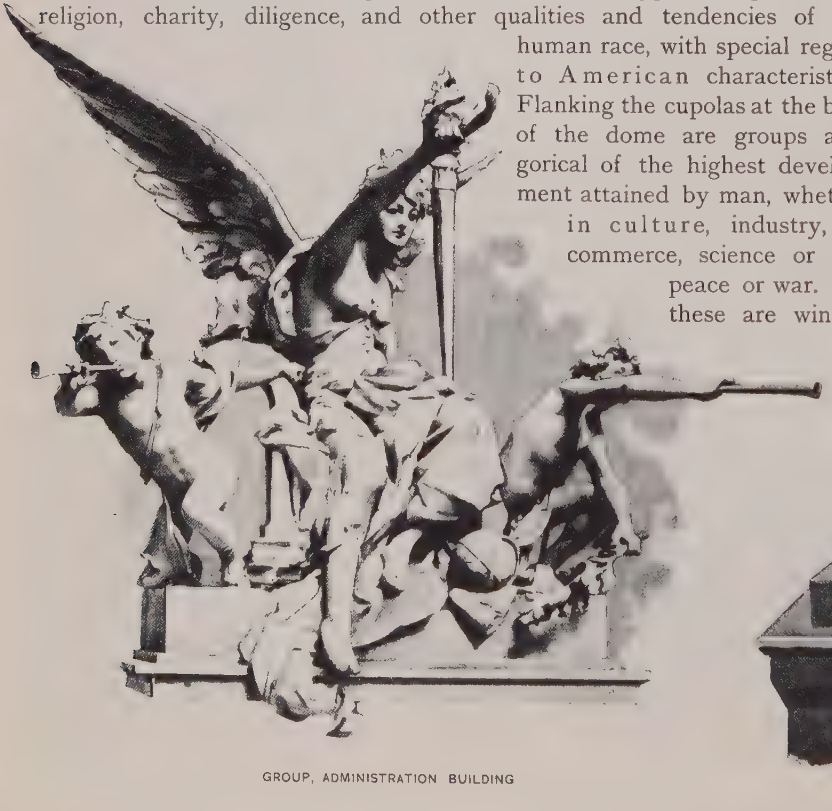
MUSIC, TOP OF ADMINISTRATION BUILDING

beauty, to make possible the creation of a bright picture of civic splendor such as this great function of modern civilization would seem to require."

The decorative features of the Administration building are no less worthy of commendation than is the building itself. Far upon the frescoed walls and between the grand arches of the rotunda, are panels on which are imprinted in gilt letters the names of the principal countries represented at the Exposition. Above the arches and the carved moulding which surmounts them are inscribed on other panels some of the great discoveries and events of the past and present centuries, with the names of prominent discoverers and inventors, on a higher border of moulding, over a row of small latticed windows. Above these are portrayed in plaster medallions the various types of women, among the leading nations of earth. Near the summit of the interior dome are groups of statuary, in each of which the central figure is a woman in the act of crowning with a wreath one to whom honor is due. Over one of these figures are the letters W. C. E., and in front of it, in kneeling posture, the typical exponents of science, industry, literature, and art.

But it is on the outer dome that one of the youngest of the Exposition artists, though a medallist of the Paris Exposition and the American Art Association has given us the gem of the decorative scheme. While the largest of all the decorative paintings of the Fair, so perfect is its execution that, as with the Fair itself, its monumental proportions are veiled by its symmetry of design. Here Apollo sits enthroned, and before him kneels a warrior on whom he is conferring the wreath of victory. Others are ascending the broad stairway of this Olympian dais, and around the entire vault extend in unbroken procession the favored representatives of the peaceful arts. Over a model of the Parthenon, drawn by four winged steeds, female figures are raising the canopy of its amphitheatre.

Of sculpture there are twenty-eight groups in all, with many single figures and bas-reliefs. On the sides of and above the entranceways are those which represent the four elements—earth, air, water, and fire—and at the corner pavillions, such as are typical of patriotism, religion, charity, diligence, and other qualities and tendencies of the human race, with special regard to American characteristics. Flanking the cupolas at the base of the dome are groups allegorical of the highest development attained by man, whether in culture, industry, or commerce, science or art, peace or war. In these are winged



GROUP, ADMINISTRATION BUILDING

STATUE OF THE REPUBLIC

STATUARY, ADMINISTRATION BUILDING

female figures, with boys proclaiming in trumpet tones the symbolic language of the theme. Thus is also relieved the severity of the structural design.

As to the several branches of the administration bureau, with their various functions and operations, little remains to be added to that which has already been said in this connection. Here, during the formative period of the Exposition, were the headquarters of its various departments, afterward removed to the rooms set apart for them in the home of the Fair, the post-office, for instance, being now in the Government building, and so with the rest. Nevertheless there are features still remaining that are worthy of passing mention. First of all there is a branch of the bank of the Northern Trust Company of Chicago, for the care of deposits, the purchase and sale of foreign and domestic exchange, and for telegraphic and cable transfers. This was established at the solicitation of President Higinbotham, soon after the suspension of the Exposition branch of the Chemical National bank, on which occasion the entire sum deposited by exhibitors, amounting to some $75,000, was made good by the directors and their associates. "The good name of Chicago," said the president, "cannot afford to be smirched by such a small matter as $75,000. If the sum were ten times that amount, it would be raised by the business men of the city."

On the ground floor of the south-east pavilion are the offices of the Western Union and Postal telegraph companies, and on other floors are, in the order named, those of the Board of Lady Managers, the National Commission and the committee on ceremonies. In the north-east pavilion are the quarters of the custom-house, the secretary of installation, the World's Columbian Exposition, the director-general and the department of awards. A third pavilion, in the south-west corner, is set apart for express companies, for the branch bank and the vaults of its safety deposits, for the department of Foreign Affairs, and the offices of the Columbian guard. The remaining pavilion is largely devoted to the press; and here also are the rooms of the department of Publicity and Promotion, and of the official catalogue and directory. In describing the wonders of the Exposition, some of the ablest pens are busied, representing nearly all our states and territories, with many foreign lands, and forming probably the largest gathering of correspondents ever seen. By the middle of June, Great Britain and her colonies had nearly two-score correspondents on the ground, among them those of the London *Times*, *Morning Post*, *Art Journal*, *Graphic*, *Illustrated London News*, *Pall Mall Gazette* and other metropolitan journals. There were also representatives from minor English cities, from Scotland, Ireland, and Wales, from Canada, Australia, and Hindostan. To Germany fifty members of her press sent home their descriptions from a city whose denizens of German parentage outnumber all other nationalities. France had sixteen correspondents, Austria about as many, and Italy more than twice that number. Other European countries had several men in the field, all save the one whose acquisition of her New World empire the Fair was intended to celebrate, Spain being represented by a single correspondent, that of the Madrid publication, *La Union Catholica*. Add to this the descriptive matter scattered broadcast throughout the world by the department of Publicity and Promotion, and it will be seen that if the Exposition should prove a failure, a financial failure, that is, for an artistic failure it cannot be—it will not be for lack of advertising. No wonder that from an average of some $10,000 or $12,000 for the month of May, the gate receipts increased to more than $50,000 a day before the end of June.

STATUARY, ADMINISTRATION BUILDING

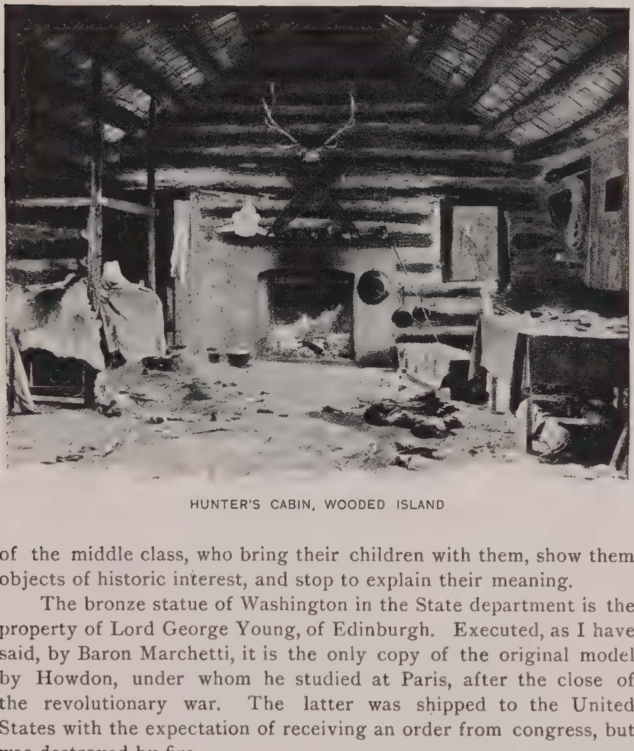
PLOUGHS ANCIENT AND MODERN IN GOVERNMENT BUILDING

World's Fair Miscellany.—The cost of the federal building was about $325,000, or a little more than $2 per square foot of floor area. As the appropriation was $400,000, there remained a balance of $75,000, with which were erected the army hospital, the naval observatory, and the quarters of the weather and Indian bureaus.

At various points around the northern gallery are canoes of various patterns, among them the Alaskan war canoe mentioned in the text, one hollowed from a single trunk, and with figures painted and carved after the grotesque fashion of the Aleuts. From the centre of the gallery rises the top-mast of a vessel, with a look-out on the cross-tree. On one side of it is the bowsprit of a whaler, and on the other the bow of a whale-boat, with men standing ready to cast their harpoons. In the wall of the gallery floor are decorated panels, typical of the industries of the four principal sections of the United States. Thus the north is represented by commerce; the south by cotton and fruits; the east by arts and science, and the west by agriculture. On other panels are representations of tapestry, plastic, metal, wood, and stone work. Over the northern entrance are depicted the triumphs of liberty; over the southern, the homes of cave-dwellers; above the eastern door-way is a birds-eye view of the Chicago of to-day, and above the western is its site as it appeared in 1492.

The California redwood from which was cut the section in the central rotunda of the Government building was 300 feet high and 81 feet in circumference. To cut and forward this exhibit in a number of subdivisions, on eleven railroad cars, cost, with the work of putting it together, more than $10,000. It was named the General Noble, after the late secretary of the interior.

Says the manager of the State department, G. Hunt, to whom I am indebted for a valuable dictation thereon: "Among the purposes of its exhibits was to popularize itself, especially by laying stress on its possession of the earlier records of the formation of our government, comparatively few of which have ever been printed. That people may see for themselves they have never been printed was indeed one of the objects of their exposition." As with other departments of the government display, this is not intended for the gratification of idle curiosity, but as an opportunity for study, its illustrations being so arranged as to stamp on the minds of the people the actual working of the department. It is worthy of note that the greatest interest in these groups is displayed by visitors of the middle class, who bring their children with them, show them objects of historic interest, and stop to explain their meaning.


HUNTER'S CABIN, WOODED ISLAND

The bronze statue of Washington in the State department is the property of Lord George Young, of Edinburgh. Executed, as I have said, by Baron Marchetti, it is the only copy of the original model by Howdon, under whom he studied at Paris, after the close of the revolutionary war. The latter was shipped to the United States with the expectation of receiving an order from congress, but was destroyed by fire.

To fire the 52-ton piece of naval ordnance requires a charge of 460 pounds of powder, and each time it is discharged, the sum of $1,200 is added to the expenses of the navy. To transport this gun was a task of no slight difficulty. Fashioned at the Watervliet arsenal, near West Troy, it was brought over the Pennsylvania railroad to the Exposition on two cars of similar construction, with triple sets of wheels and protected by a bridge, weighing in all 115 tons, apart from the locomotive. Whether the bridges would bear this enormous strain was somewhat doubtful, and at one time it was thought they could only be hauled over a track built for the purpose and avoiding the rivers; but this was found unnecessary. In the quartermaster's department is a display of barrack furniture, with bedding and bunks, mess-tables, cooking ranges, and other camp and garrison apparatus, and with farrier's and veterinary exhibits, showing the treatment of animals for lameness and disease. Here also is a forage wagon which formerly belonged to the army of the Potomac, and saw perhaps the roughest usage of any in the civil war, travelling, it is said, more than 40,000 miles before the war was ended.

Among the exhibits of the War department is a gun-stock lathe, for which, in 1822, a patent was issued to its inventor, Thomas Blanchard. This, the oldest and the first manufactured, became the property of one of the United States armories, where it remained until 1855.

Among the decorative features of the national museum is a collection of sportsmen's trophies, and of the portraits of prominent scientists in the various branches of natural history.

JAMES ALLISON

For the collection of stamps in the post-office department the Fair is indebted to the American Philatelic Association, and to individual collections, some of them containing a complete set of specimens issued by the country represented. In a word it is an exhibit of postage stamps by American collectors, under the auspices of the society. The cases were specially prepared for the purpose, roofed with heavy plate glass, and with a total capacity of 50,000. Though not equal to the best European collections, as the one in the imperial post-office museum at Berlin, it is probably the most extensive and complete thus far attempted in the United States.

For information regarding the Fisheries department I am largely indebted to its manager, T. H. Bean, who was kind enough to furnish me with a valuable dictation. By several firms contributions were made of rods, reels, and other fishing apparatus, the Montague City rod company sending many specimens of their choicest articles of manufacture, and the New York firm of Abbey & Imbrie a collection of salmon, trout, carp, black bass, and other rods, in addition to the one mentioned in the text, on which he who is inclined may expend the sum of $2,000. The largest collection of flies is from Charles F. Orvis, of Manchester, Vermont, and there is a handsome group, forwarded by D. W. C. Farrington, of Lowell, Massachusetts, together with several mounted specimens of trout.

There are many models of fish, indigenous to northern waters, whereby taking one year as the starting point of age, comparisons are made in the growth of such identical descriptions as belong to the lakes of Maine, Lake Michigan, and inland waters to the southward. Here are displayed the effects of climate, alkaline waters, etc., some reaching thrice the size of others and, as a rule, becoming larger toward the south.

By William F. Hubbard, acting under the instructions of his chief, Philip Walker, as special agent, I was supplied with an

ON BRIDGE NEAR MANUFACTURES BUILDING

excellent dictation on the Agricultural department. Exhibits worthy of mention in this connection, in addition to those described in the text, are a collection of plows of ancient pattern and a case containing cocoons raised in the United States, with specimens of silk and silken fabrics, and some of the apparatus used in China for preparing silk for market. In the entomological section nature is counterfeited in most realistic fashion. In one of the models, for instance, is a full-grown beetle in pursuit of a potato bug, which presently he will devour. In another is a soldier fly hovering above a potato bug on which he is about to pounce. The tomato and cotton worms are represented as attacking these plants, and so with the pests that injure or destroy the grape vine and citrus fruits. Collections of insects destructive to agriculture are mounted in cases that show in regular series their transformation and other insects which devour them. There is also a collection of spiders and other arachnida indigenous to the United States, among them the large specimens of New Mexican and Texan genera, such as catch and suck the blood of birds.

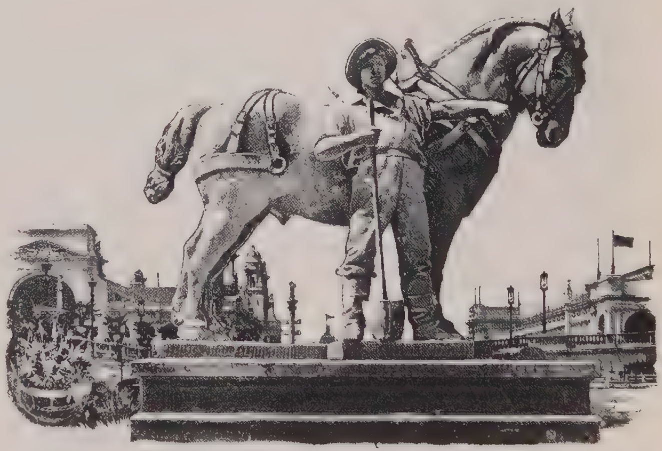
By Professor Eggleston, of the Forestry department, was suggested the idea of representing by the section of a tree the ages that have elapsed since the Columbian era, with their leading historic events. Only after long and diligent search did his agent in Mississippi discover this so-called Columbian tree.

The *Illinois* was formally opened for inspection, as a model of one of our most powerful war-vessels, on the 3d of June, though visited by scores of thousands before that date. The ceremonies, which were of the briefest, were conducted on the gun-deck, under the direction of Lieutenant E. G. Spencer, and in the presence of a number of guests to whom invitations had been extended by her commander, Captain Taussig. On this occasion the ship was for the first time illuminated. Along the entire gun-deck two rows of electric lights depended from either rail, their glare subdued by globular shades or screens, after the fashion of Chinese lanterns. And so with the upper decks, above which the search-lights cast their glare athwart the surface of the lake. After her formal opening the *Illinois* was illuminated thrice a week, as were the Exposition grounds and buildings.

The life-saving station is under the charge of Lieutenant Charles H. McClellan, who served in the navy during the war, and for the last fifteen years has been engaged in this branch of the service. To take charge of the Fair station he was temporarily relieved from his command of all the stations between Cape May and Sandy Hook, and largely to his organization and management is due their efficiency. Among the apparatus of the station are the Lyle & Hunt guns, the former carrying a projectile weighing nearly 20 pounds and with line attached, to a distance of more than 500 yards, and that with such precision that a second shot is rarely required. More powerful but less accurate of aim are the Cunningham rockets, seven feet long, and carrying almost double the distance reached by either of the guns.

Among the collection of chronometers in the naval observatory is one that was used by Charles Francis Hall in his Arctic expedition of 1872. Buried in ice at a far inland station, it was found, several years later, by a member of the British expedition of 1876, and in good condition, though a part of its long imprisonment had been passed in a temperature 100° below freezing point. Another is a chronometer which Captain De Long used on board the *Jeanette*, and carried with him in his attempt to cross the frozen continent. It was found in his last camp on the Lena delta, where, with the last of his party, he perished of starvation, after subsisting for several weeks on a single teaspoonful of glycerine doled out thrice a day. Still another is the old-fashioned instrument which Captain Wilkes carried in his expedition to southern lands and waters in 1838-42. After nearly forty years of continuous service it still keeps perfect time. There is also in a large mahogany case, bearing the stains of many years, the clock which accompanied Commodore Parry on the voyage which opened the ports of China and Japan to the commerce of the world. Finally there are the chronometers, or what remains of them, belonging to the vessels wrecked at Apia, during the hurricane which a few years ago swept over the island of Samoa.

Those who stop to admire the gigantic section of the tree which stands under the dome of the Government building may be interested in knowing that it once grew in the edge of Converse basin, beyond the General Grant National park, California. It once stood, says a witness to its destruction, among a goodly company of quaint red-woods, interspersed with firs and pines of every variety, six thousand feet above the sea. Among the crew of those who felled it were men from Missouri, Maine, Virginia, Iowa, and Scotland. It had been agreed between the government and the contractor that no nail should mar its bark, and a swinging platform was also erected around it. The tree was cut fifty feet from the ground, measuring at this height seventeen and a half feet. From this huge stump thirty feet were taken for the Fair, all the interior sections being removed except a small thickness and the bark. The falling of the tree, which was two hundred and eighty-five feet in height, was witnessed by over one hundred people from the mills and adjoining camps, the event being thus described:

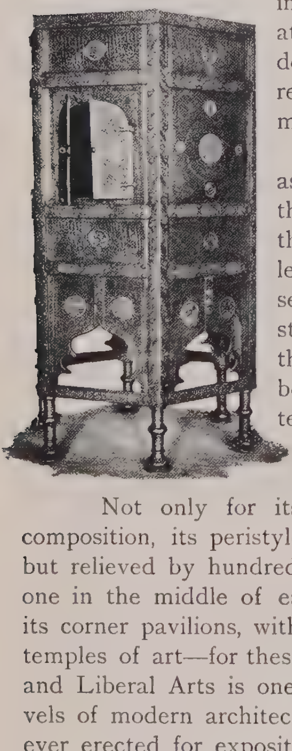


"The saw was withdrawn, the last wedge driven. The immense tree quivered like one in agony, and with a crushing, raging, deafening sound it fell, the extreme top, with its branches, falling upon an opposite hill and breaking into a million pieces. The larger part split as it fell at the base of the fifty-foot stump, and lay like the hulk of a monster ship—the weight of that part being estimated at over 200 tons."

O REGINA LYRAE, NATA DEVM, VIRIS
PESSIS AVXILIVM ET LAETITIAM FERENS

CHAPTER THE EIGHTH

MANUFACTURES OF THE UNITED STATES



GREATEST of all the exhibits of the Fair are the palaces which contain them, forming of themselves a display more superb and imposing than any of their contents. Viewed from a distance sufficient to display their sky-lines, as in their entirety they only can be viewed to advantage, these temples of industry present a dazzling spectacle. As seen from the waters of the lake, and especially at eventide, when their long array of columns and porticos, their lofty towers and stately domes, mirrored in the waters, stand forth against a glowing sky, they are in truth a revelation surpassed only by the inspired vision of him by whom was beheld the city not made with hands.

If of mammoth proportions, these halls of the great display are not only so arranged as to present to the best advantage their manifold contents, but such is the harmony of their general effect, and such their wealth of decoration, that the observer soon forgets their hugeness. While few of the structures are intended to endure, they will none the less be criticised, at least as to style and formative qualities. Buildings in their proper sense they do not pretend to be, such as was the great palace of iron and glass constructed for the London exhibition of 1851, and at its present location at Sydenham still the delight of holiday multitudes. The latter was a permanent edifice and intended so to be; but in the elaborate decoration of the Chicago Exposition we have what may be termed so many architectural screens, surrounding the framework of wood and iron which of itself would be incapable of the heroic dignity of expression presented by the city of the Fair.

Not only for its size, but for its severely classical style, its grandeur of motif, and its unity of composition, its peristyle of fluted columns, nearly a mile in length, but relieved by hundreds of symbolical figures, its four great portals one in the middle of each facade, fashioned like triumphal arches, its corner pavilions, with their spacious entrance ways, of themselves temples of art—for these and other features the hall of Manufactures and Liberal Arts is one of the most marvellous among all the marvels of modern architecture. To say that this is the largest building ever erected for exposition purposes; that it is 1,687 feet in length and 787 in breadth; that from the floor to the ridge of the roof is 236 feet; that it has more than forty acres of exhibiting space; that through it extend longitudinally and laterally two avenues 50 feet in width; that it has thirty main stairways, each 12 feet wide; that around it and within it is a gallery 50 feet wide, with smaller galleries innumerable, from which vantage point may be conveniently

A STILL HUNT

viewed almost at a glance its rich and varied display—all this would not enable the reader to form an adequate conception of the monumental edifice in which are housed many thousands of exhibits, representing the industrial and liberal arts of the civilized nations of earth.

GLORIFICATION OF DISCOVERY

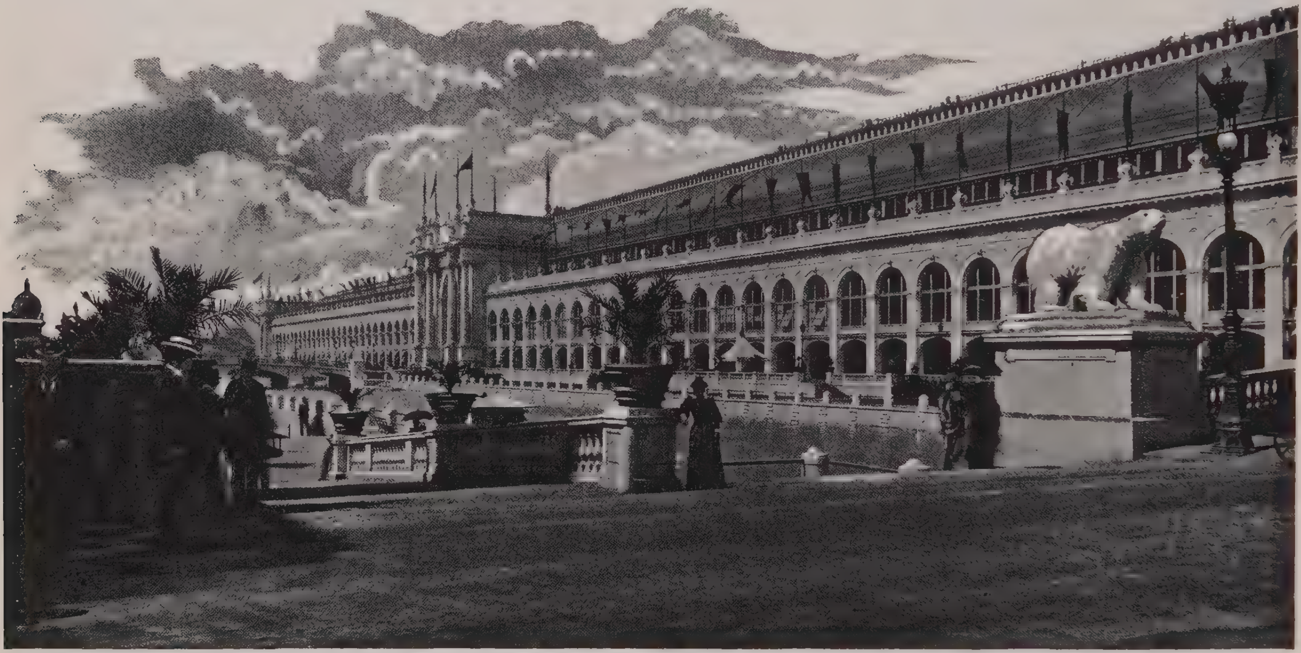
With this huge palace of industry no point of comparison can be taken, for nothing of the kind exists. Nor does it help us to know that, in its construction there were used 1,260 carloads or 16,500,000 feet of lumber, nearly 200 tons of nails, several thousand tons of iron and steel, and 60 tons of paint; that the sky-lights alone cover a space of eleven acres, and consumed 65 carloads of glass, with eleven additional carloads for the 900 large windows which the building contains. Perhaps of its dimensions no better idea can be given than to state that on its site could be erected about 500 residences, each with a lot of 25 by 100 feet, capable of accommodating in all at least 5,000 persons, and that with far less crowding than is felt in the more crowded portions of Chicago. In the construction and placing of the arched steel trusses which uphold the vast semicircular roof of the main hall, unsupported by a single column, was accomplished one of the greatest engineering feats of the age. There are twenty in all, apart from those at the ends and corners, with a total weight of 6,500 tons, each fourteen feet wide at the floor, ten at the apex, and with a span from base to base of 732 feet. To handle these huge girders a special appliance was contrived in the shape of an immense traveller or derrick, which was even more of a marvel than the girders themselves. This was probably the largest machine of the kind ever constructed, 300 feet long by 50 in width, with a central height identical with that of the roof, and with arms or extensions, 70 feet in length. Thus the workmen were enabled to place the girders in position, the derrick running the entire length of the building, on a track supported by piles, with six carriages, each with as many sets of wheels. No wonder that this feat called forth the admiration of European engineers, that it was the subject of universal comment among the scientists and scientific journals of the world, by most of whom failure had been predicted.

The central hall itself, with its clear story windows and its roof of iron and glass, is a structure nearly twelve acres in extent, compassed by a spacious system of naves and aisles and galleries, the first more than a hundred feet in width. Of its floor a portion is occupied by exhibits, presently to be described, the remainder set apart for such gatherings as were assembled at the dedication and opening ceremonies.

During the eighteen months or less that the building was in process of construction, beginning with August, 1891, from 500 to 700 men were employed; nor was there at any time the slightest difficulty in procuring either labor or material, notwithstanding the hazard and dimensions of the work. Everything was done in stable and substantial fashion, so that the fiercest of winter storms did not tear to pieces any portion of the unfinished edifice. If here and there was an appearance of instability or frailness, it was only an appearance, and never was task more thoroughly and conscientiously performed. The preparation of the site was of itself a labor of no ordinary magnitude. In some parts it was merely a swamp; in others a sand-dune. Into the marsh there were driven 3,500 piles to a depth of 35 feet, and in the sandy portion eight or ten feet of soil must be cleared away before a foundation was reached. Elsewhere was made what is termed in builders' phrase a spread foundation, formed by digging large square holes and filling them with heavy timbers laid cross-wise to the surface. Thus only could be secured the solid base on which is reared this temple of industry and art.

In the construction of this edifice were presented new problems not only in mechanical engineering but in architectural treatment; and first of all how to extend along the lake shore the wall of a structure more than two furlongs and a half in length, without dwarfing the adjacent buildings and impairing the landscape effect of the grounds. It was the original idea of its architect, George B. Post, to use a portion of his allotted area as courts or gardens, inclosed within the rectangular walls of the main fabric, and adorned with fountains and kiosks. But to do so would be to waste many acres of exhibiting space, and as the application for that space showed that even if used to the best advantage it would be all insufficient, the first design was abandoned. Then it was that the plan was adopted of forming in the interior the largest open nave that was ever constructed, yet one to which the graceful curve of the arches supporting the mountainous roof would impart a symmetrical appearance, making it an artistic no less than a mechanical feature of the Exposition.

By many the artificer of the Manufactures building has been accused of poverty of design, for between the central arches and corner pavillions he gives no intermediate accentuations, nothing to relieve the long array of two-storied columns and fluted archways. But to break with domes or towers its strictly classical lines would have been to sacrifice truth and unity for the sake of the picturesque, and even had this been done, it would have failed to give to these immense walls of architecture the symmetry that can only be given by a just correspondence of parts. Taking for his unit of measurement a length of twenty-five feet, the architect included in his plan this interminable series of bays, fifty-eight on the longer fronts and twenty-two on the shorter, preserving his facades unbroken, except for the central and corner arcades.

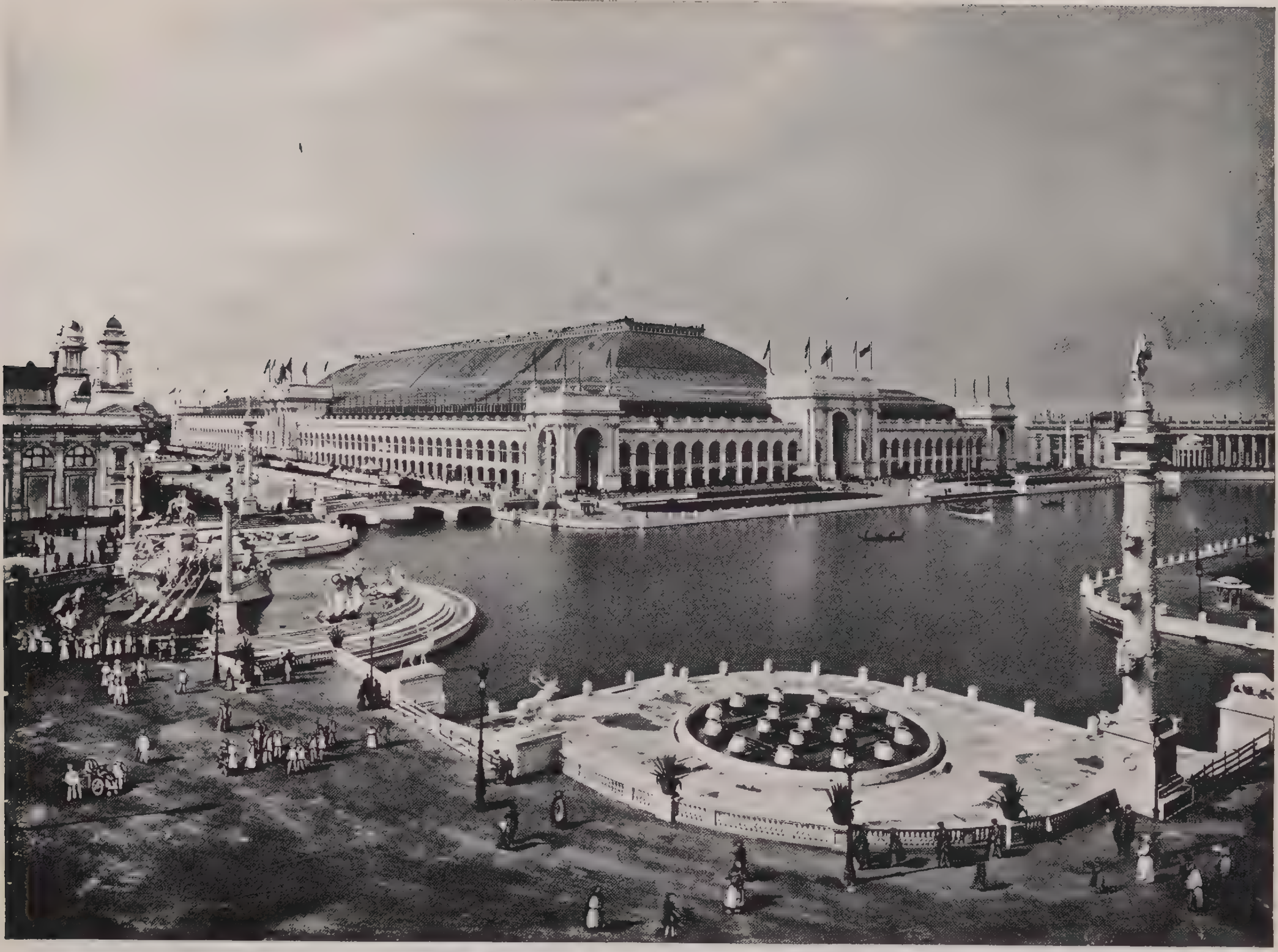


PALACE OF MANUFACTURES AND LIBERAL ARTS

In the central pavilions has been reproduced, on a larger scale, the triple triumphal arch of the days of Constantine, and in the corner pavillions, at the turn of their corners and on each face of their angles the single arch of Trajan, the latter with double Corinthian columns. The entablatures are in horizontal form, with lofty attic, and in front of the piers are columns more than sixty feet in height, also of the Corinthian order, and resembling those depictured in the temple of Jove the Restorer. In these lofty and pedestaled columns, standing boldly forth from the otherwise unbroken surface of the facades, we have the only strong perpendicular lines in the entire edifice.

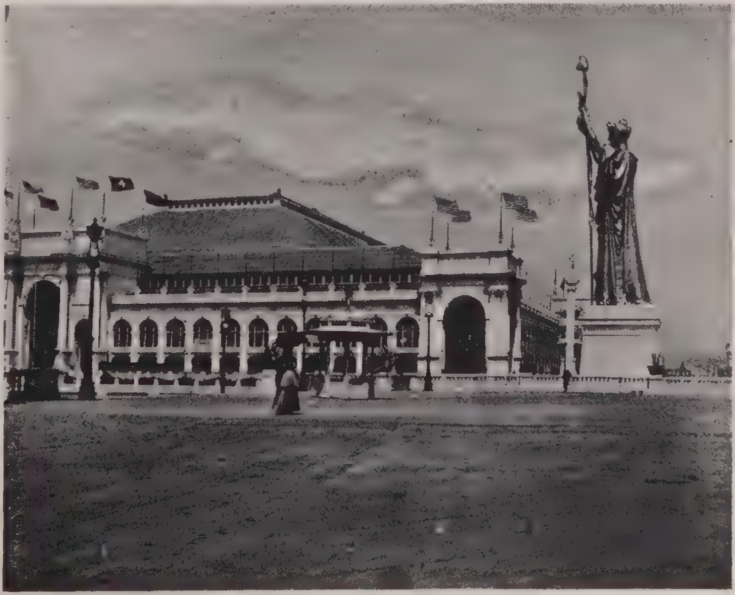
Says one of the architects: "It is evident that within his classic Roman frame Mr Post has desired, in his detail of decoration, to bring his design into sympathy with modern civilizations; for we shall see that the luxury of Napoleon III affects the sculpture of his spandrels and panels, and that nearly all the ornament bears traces of the influence of the latest French Renaissance and the last Paris Exposition. Moreover, in order to relieve his design from the serious expression imposed upon it by the grandeur of his leading motives, he makes a very proper concession to the festive and holiday aspect which should pervade the place by planting permanent standards and gonfalons on his triumphal arches, and by decorating his battlements with banner staffs and bunting.

"It may be proper, before leaving the consideration of the largest of these buildings, to look back upon Mr Post's immense facades, and to ask whether, if they had been treated with the variety, contrast, and balance of motives customary in the works of the renaissance, if they had been broken by towers and campaniles, or tormented by gabled pavillions, they would not have presented a somewhat confused and incoherent aspect,



AROUND THE MANUFACTURES BUILDING

wanting in apparent unity of thought, and resembling rather a combination of many buildings of various uses than a single building of one use; and further, whether the simplicity of treatment which he has preferred has not resulted in a composition having architectural qualities which, instead of confusing and puzzling the mind, can be read, understood, and remembered with pleasure. The civilization of our time owes a debt of gratitude to any architect who, in the midst of the temptations which beset us to force effects of beauty by affectations and mannerisms, dares to make his work at once strong, simple and elegant."



SOUTHEAST CORNER MANUFACTURES BUILDING. STATUE OF THE REPUBLIC

While simple in plan, too much so perhaps to suit the taste of the average sight-seer, the hall of Manufactures is richly adorned with decorative paintings. On one of the domes of the northern portal is depicted the genius of electricity, wielding the thunderbolt, and by female figures are illustrated the various branches of electrical science. Thus the dynamo is represented by a woman seated on a magnet, and at her feet, a belt and revolving wheel; at a Morse instrument is the personification of the telegraph; an arc-light is held aloft by a female form on bended knee, and the telephone is symbolized by a figure holding a tube to her ear, and around her the tape of the indicator. On the opposite dome is a group representing the abundance of land and sea. On the arches of the pavillion in the centre of the east facade are typified by stalwart artisans, with all the accessories of their craft, wood-carving, stone-cutting, forging, and machinery, and by female figures, steel-working, building, and ceramic arts, the last by a stately damsel with vase and brush, in drapery of blue and white.

In one of the domes of the southern entrance iron-working is symbolized by a sturdy representative of his craft, and ornament, design, and the textile arts by female figures, between which boys are waving branches of palms and lamps of antique pattern, their smoke curling in wreaths against an opalescent sky. In the other dome, women seated on the balustrade, in drapery of purple, green, and blue, represent the goldsmith's craft, and the decorative, textile, and other arts. In the western pavillion are also figures typical of decoration and design, with vases connected by festoons of flowers and vines, and in the opposite dome, forms symbolic of metal-working. In the corner pavillions are depicted the arts of peace and war, of music and the chase, while education is represented by a gathering of students, some rendering homage to Pallas Athene, and others engaged in the more sensible task of study or critical analysis.

ON THE ROOF OF MANUFACTURES BUILDING

As to the scope of the exhibits, it may first of all be stated that they include almost as many participants as were represented in the entire Centennial Fair, excluding from the latter the single department of agriculture. In thirty-five groups of unusual size, divided into more than two hundred classes, and in some of the classes from one to three-score collections, are displayed the choicest products of man's handiwork, aided by the best and most recent of modern machinery in all the forms and patterns that have taxed the ingenuity of the human race. Never before has such an opportunity been presented of comparing the relative progress of manufacturing industries among European, American, and Asiatic nations, together with their inventive genius, whether in the direction of labor-saving appliances or of improvements in quality and design.

The Manufactures department does not contain, as too often has been the case in former expositions, merely a huge collection of warehouse commodities; it is rather a comprehensive display of the choicest specimens culled from the manufactured products of all the nations, with the allotments of space among many thousands of participants reduced to a minimum, that justice might be done to the greatest number and room afforded for all the most worthy exhibits. As to classification, it was proposed by the chief of the department "to secure such perfection of detail and such logical, consistent, and harmonious combination in the arrangement of the several classes and groups as will secure a display which will be both instructive and artistic, appealing to the intelligent and æsthetic sense of each observer."

In few departments of the great World's Fair has more of interest been aroused than in this rich and varied display, representing the progressive industries of our own and foreign lands. Here are not only the choicest products of American and European factories, but those of nations which, though as yet making little use of mechanical appliances, are in some respects superior to either. Here may be compared the silks of China and Japan, their porcelains, their lacquer and wood work, their bronze and copper work, with those

AT THE SOUTH ENTRANCE MANUFACTURES BUILDING

which France and England produce. Here also may be noted the cruder products of countries whose manufacturing industries are yet in their infancy, such countries as Zanzibar and the Orange Free State, as Madagascar, Corea, and Siam.

As an indication of the world-wide participation in this department, it may be mentioned that the room requested for the accommodation of single industries would, if granted, have covered more than half of its forty acres of flooring. When it is remembered that here are represented many hundreds of industries, it will be seen that in the allotment of space alone the managers had before them a task of no slight difficulty. But a still more arduous task was that of placing under a single roof all these numberless specimens of human ingenuity, while avoiding needless duplication and amplitude. This was indeed a problem which tested the skill and patience of the management. Nevertheless it was accomplished, and here we have by far the most ample and valuable illustration of industrial progress ever beheld by man, the greatest triumph that has ever been recorded in the history of the useful arts.

ALONG THE GRAND CANAL

In this palace of magnificent distances, the visitor, notwithstanding the skilful grouping of its contents, finds himself somewhat at a disadvantage in comparing the classes of exhibits as arranged under various nationalities. Thus to compare the textile fabrics of Persia with those of the United States, he must walk more than a third of a mile, for they are in groups diagonally opposite, the former near the south-western corner, and the latter in the north-western portion of the building. Starting, let us say, from the American collection, he must traverse almost the entire length of Columbia avenue, as is termed the main longitudinal nave which, together with the transverse nave, intersecting it at right angles, divides the ground floor into four equal sections. Thence, into a lateral aisle near the southern portal, he turns to the right, and after passing the pavillions of Italy and Spain, finds himself at length in front of the Persian booth.

Except for a chamber in the southeast corner of the building, devoted to the liberal arts, the entire ground floor, together with two of the gallery sections, is occupied by the department of manufactures. Before making the tour of its thirty acres of exhibits, which, for the purposes of the sight-seer is almost equivalent to a tour of the world, let us glance for a brief moment at the plan of installation and the space allotted to home and foreign participants. First of all this space was divided into sixteen sections, lettered in alphabetical order, and each section into four numbered blocks, except for those marked A, I, H, and Q, which contain only three blocks. The exhibits are arranged in classified groups, and the location of each is indicated, not as in the classification list, but by one or more of the letters between A, and Q, and one or more numbers between one and four. Thus furs and fur clothing, marked group 105 on the list, are installed in section G, block one; some groups, as that of furniture,

EAST FRONT MANUFACTURES BUILDING

INTERIOR VIEW MANUFACTURES BUILDING

upholstery, and artistic decorations, occupying blocks in several sections. To the exhibits of the United States was allotted nearly one-third of the total exhibiting space, and yet but little more than ten per cent of the space applied for. To foreign powers assignments were in proportion to the scope and character of their display. Encircling the building on all its four sides are the minor compartments of officials, restaurateurs, and others, to whom concessions were granted.

Entering through any of the numerous portals, we presently find ourselves at the spot where Columbia avenue is intercepted by the transverse nave, each fifty feet in width. Here, in the centre of the great circular court which surrounds the point of intersection, flanked by the exhibits of the United States, of Germany, Great Britain, and France, the first thing that strikes the eye is a clock tower of elaborate design, 40 feet square at the base and 125 in height, with four entrance ways, separated by corner pavillions. From one of these pavillions, stairways lead to the third floor, with access by ladders to the clock floor above. The clock, which serves as the official timepiece of the department, is worked by electricity, with dials seven feet in diameter, and above it, on still another floor, is a chime of bells, set in motion by its machinery, and whose music may be heard afar over the waters of the White City, the bells being set in motion by its machinery and by a keyboard in the jewelry section, with which it is connected by electric wires.

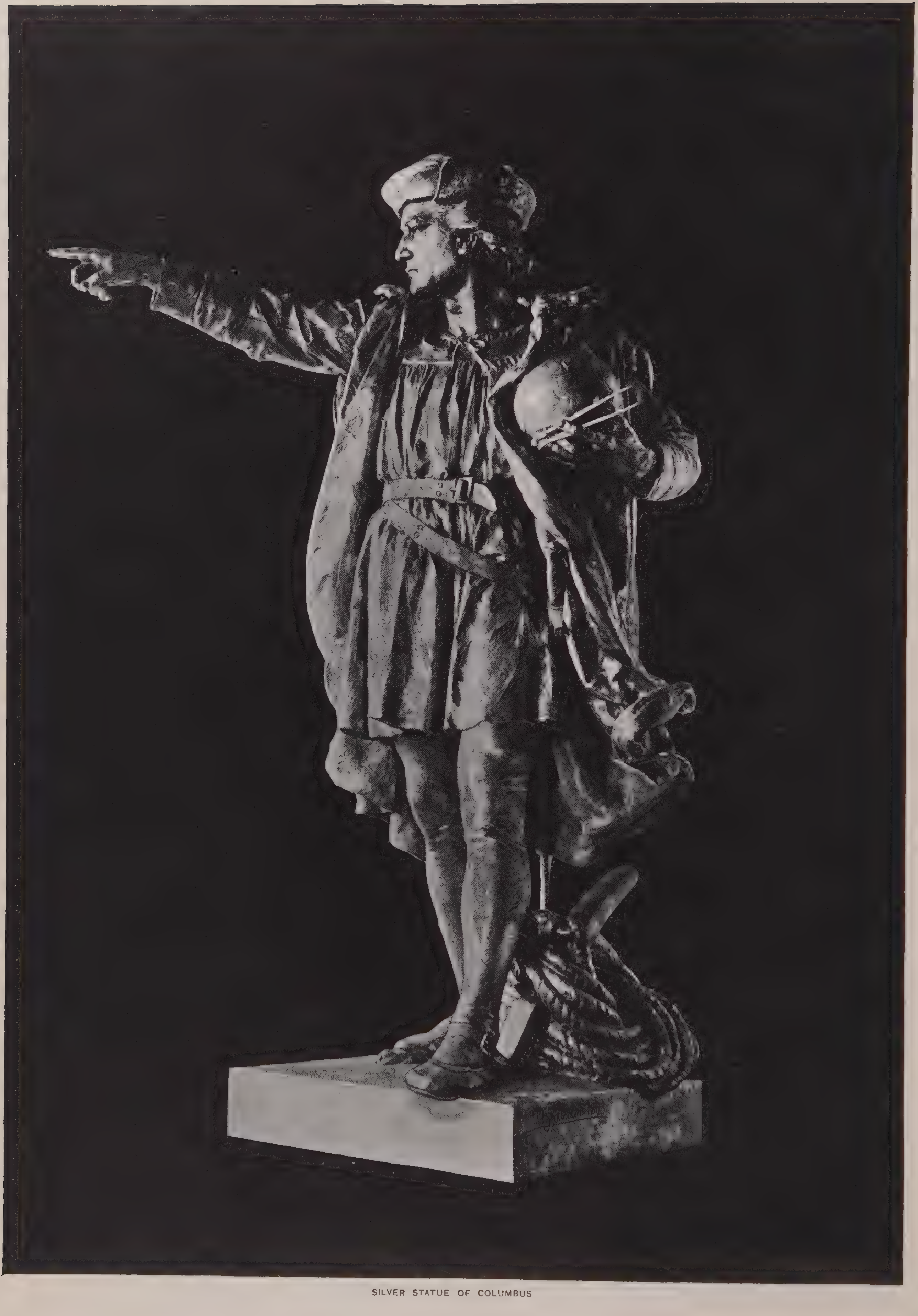
VIEW FROM GALLERY MANUFACTURES BUILDING

From the central court, the

THE CLOCK TOWER

exhibits of the United States extend along the entire north-east quarter of the building, and thence westward in a narrower section along the northern side, in addition to about 100,000 square feet of the gallery floor. Though condensed, as I have said, into one-tenth of the room applied for, this is by far the largest and best display of home industries ever made by any country, and only by this process of condensation could the management secure a choice and yet complete collection, one that would bear comparison with the most select of foreign groups, and would not completely dwarf their more compact exhibits. While duplications of the same product were in a measure inevitable, they have as far as possible been avoided, and it is not on account of wearisome repetition that the visitor turns aside to the foreign pavilions on the opposite side of the nave, where he passes rapidly from one species of fabric to another. By certain foreign critics it has been alleged that in symmetry, variety, and skilful blending of groups, the exhibits of the United States compare unfavorably with their own; that their setting is faulty, and their environment unattractive. But it should be remembered that they cover many times the space allotted to any foreign participant, and with specimens many times as numerous, thus forbidding the individual characteristics and more rapid transition of their European neighbors. Moreover, not a single dollar of government funds has been expended on our own display, while by Germany, France, and other powers, a part of their liberal appropriations was devoted to the unification of their exhibits, another portion to the pavilions which contain them, and still another to the selection by experts of such articles as would most creditably

ELEVATOR, MANUFACTURES BUILDING



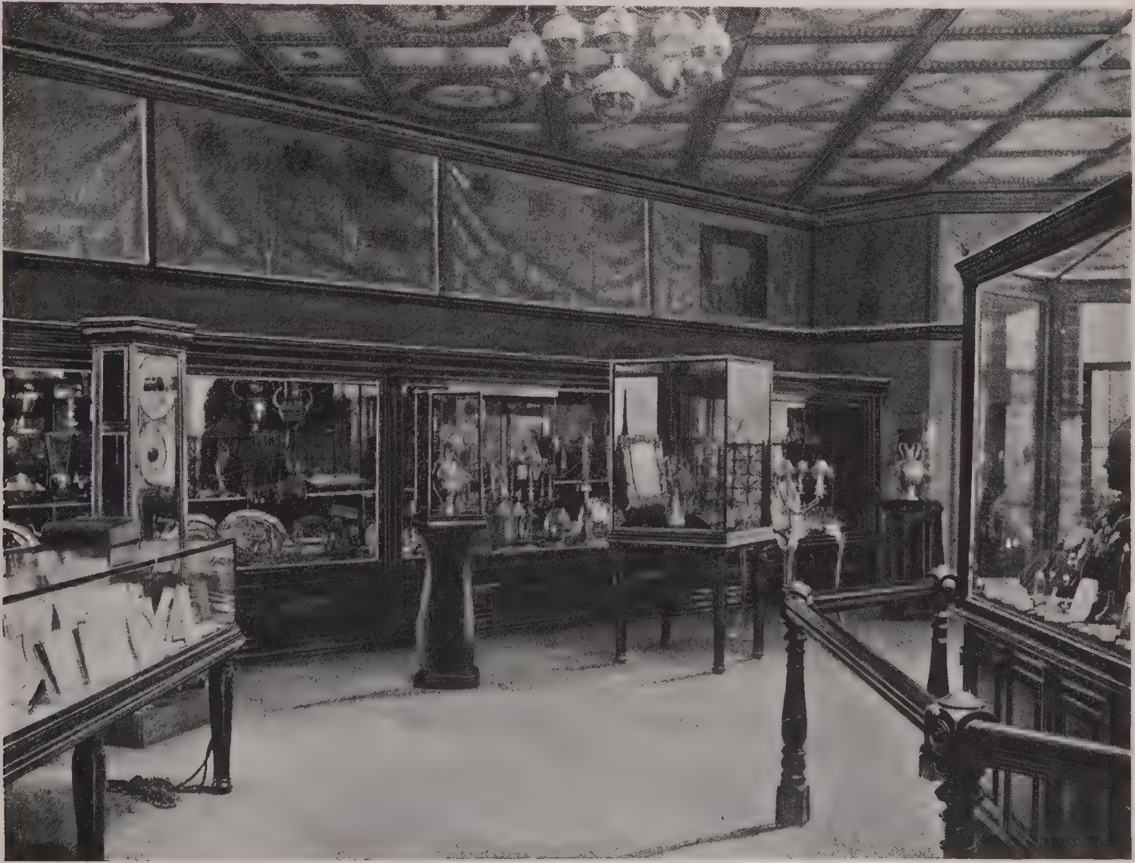
SILVER STATUE OF COLUMBUS

GORHAM PAVILION

represent the progress of the nation and the exhibitor.

If in certain classes of products our exhibits are excelled by those of foreign lands, our silks for instance by those of France, and our porcelains and cut-glass ware by those of Austria and Bohemia, this is more than atoned for by excellence in other directions. While in the foreign pavilions are many beautiful objects for the eye to rest upon, such as are well worthy of a place in homes of refinement and culture, and especially in the home of the Fair, we have in our own section the very embodiment of industrial progress, the substance of material prosperity. The visitor whose purpose is not merely to be amused, or to study art alone, whether on canvas, in statuary, or in its application to works of common utility, will, if he reads aright the lessons of an exposition intended to display the relative and individual development of the nations, find in the American booths much that is of absorbing interest, both from an industrial and artistic point of view.

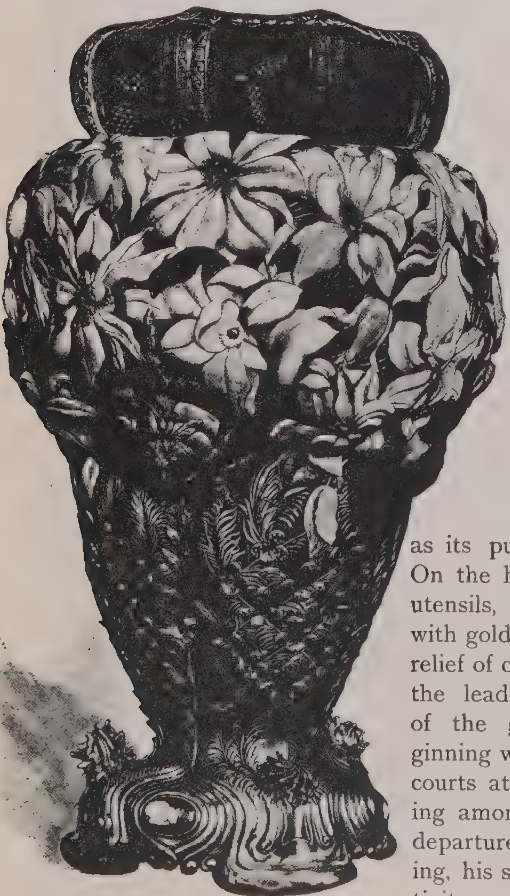
Opposite the northeast section of the central court is a cream-colored pavilion decorated in gold, in front of it a tall fluted column with Doric capital, at the base of which is the inscription, Exhibits of the United States of America. Here are some of the most costly groups on exhibition—those of the New York jewelry firm of Tiffany and company and the Gorham Manufacturing company. In the arches of the pavilion are



GENERAL EXHIBIT, TIFFANY

SILVER TEA SERVICE

panels on which, among other illustrations, are the London workshop and salesroom of a silversmith of the seventeenth century, the patron saint of the craft. In the spandrels between these panels are medallions in relief of famous designers and silversmiths, from Holbein and Michael Angelo to Paul Revere.



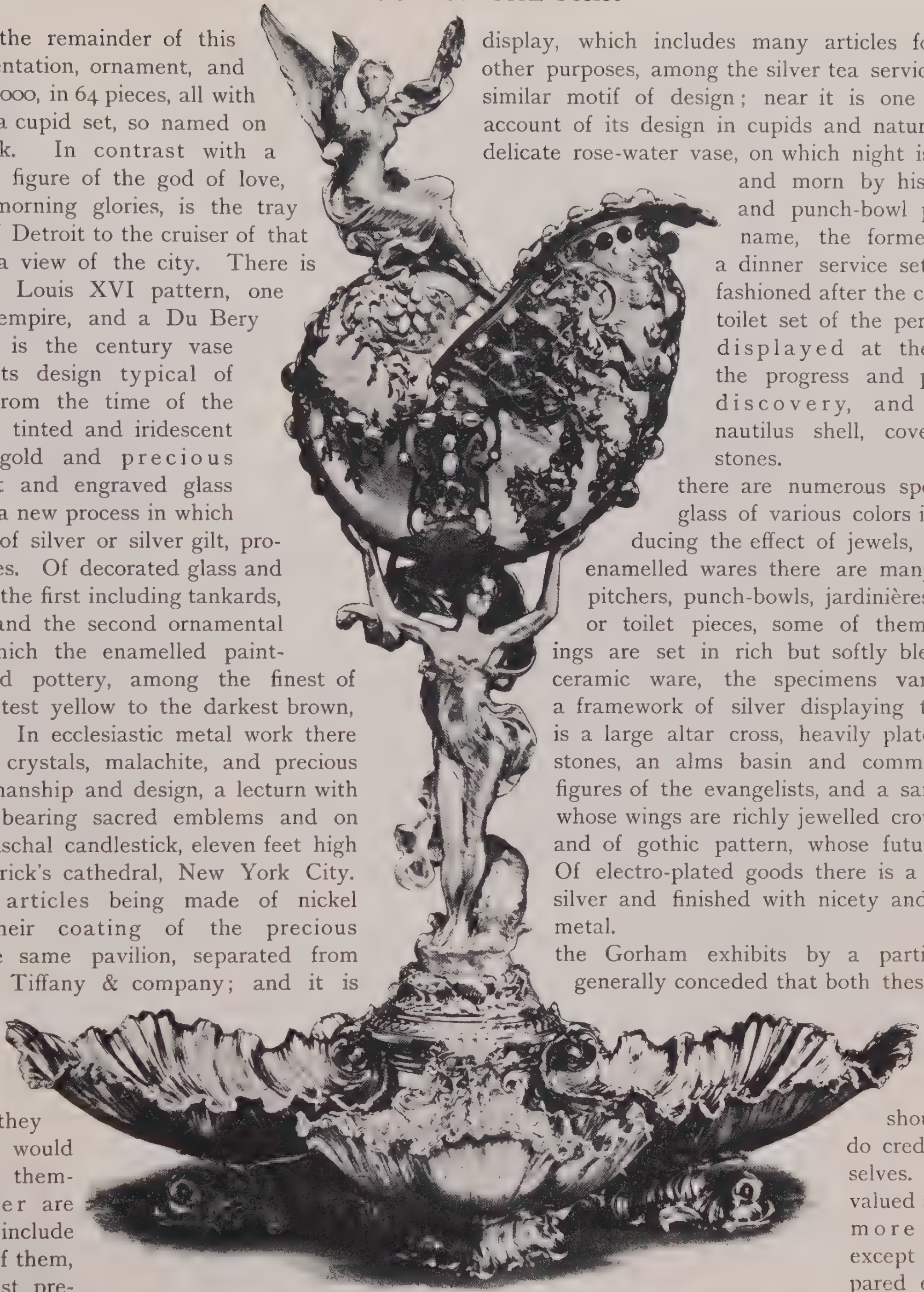
MAGNOLIA VASE

The floor of marble mosaic is divided into sections by cases of mahogany and glass, filled with samples of the company's work, electric lights being extended around the columns which support the roof, and grouped beneath the ceiling above a silver statue of Columbus. Designed in clay by Bartholdi, and modelled in plaster of Paris, the statue was cast in solid silver, the oxidized form of the metal being used for finishing, to give more life-like coloring, with play of light and shade. In this figure, somewhat more than six feet high and probably the largest statue ever fashioned in silver, were used 36,000 ounces of the metal, as nearly pure as its purposes would permit. On the handles of silver table utensils, some of them inlaid with gold, are portrayed in bas-relief of clear and simple design, the leading events in the life of the great discoverer, beginning with his appeals to the courts at Granada, and including among other incidents his departure from Palos, his landing, his second voyage, his captivity, and his death.

GLASS AND GOLD

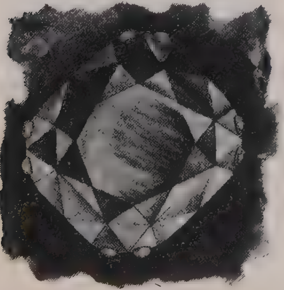
As to the remainder of this display, which includes many articles for household use, for presentation, ornament, and other purposes, among the silver tea service sets is one valued at $20,000, in 64 pieces, all with similar motif of design; near it is one of Japanese pattern, and a cupid set, so named on account of its design in cupids and natural flowers in repoussé work. In contrast with a delicate rose-water vase, on which night is represented by a sleeping figure of the god of love, and morn by his awaking in a bower of morning glories, is the tray and punch-bowl presented by the citizens of Detroit to the cruiser of that name, the former presenting in bas-relief a view of the city. There is a dinner service set of oxidized silver of the Louis XVI pattern, one fashioned after the classic models of the first empire, and a Du Bery toilet set of the period of Louis XV. There is the century vase displayed at the Centennial Exposition, its design typical of the progress and prosperity of America from the time of the discovery, and there is a yacht cup of tinted and iridescent nautilus shell, covered with a network of gold and precious stones.

Of cut and engraved glass there are numerous specimens, one representing a new process in which glass of various colors is blown into a framework of silver or silver gilt, producing the effect of jewels, crystals, and precious stones. Of decorated glass and enamelled wares there are many and multiform articles, the first including tankards, pitchers, punch-bowls, jardinières, vases, and fruit dishes, and the second ornamental or toilet pieces, some of them of gold or silver, on which the enamelled paintings are set in rich but softly blended colors. Of Rookwood pottery, among the finest of ceramic ware, the specimens vary in shade from the lightest yellow to the darkest brown, a framework of silver displaying their tints in strong relief. In ecclesiastic metal work there is a large altar cross, heavily plated with gold and set with crystals, malachite, and precious stones, an alms basin and communion set of similar workmanship and design, a lecturn with figures of the evangelists, and a sanctuary lamp with angels bearing sacred emblems and on whose wings are richly jewelled crowns. Finally there is a paschal candlestick, eleven feet high and of gothic pattern, whose future home will be in St Patrick's cathedral, New York City. Of electro-plated goods there is a large assortment, such articles being made of nickel silver and finished with nicety and care before receiving their coating of the precious metal.

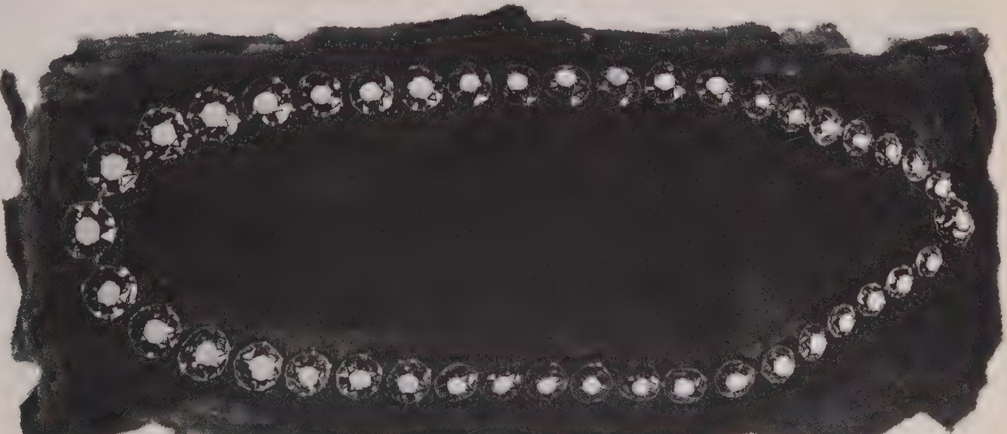


NAUTILUS PRIZE CUP

In the same pavilion, separated from the Gorham exhibits by a partition, is the collection of Tiffany & company; and it is generally conceded that both these firms have more than fulfilled the condition on which was assigned to them one of the places of honor—that they should furnish a display which would do credit to the nation and to themselves. The exhibits of the latter are valued at about $2,000,000, and include more than 1,000 pieces, most of them, except for articles of historic interest, prepared especially for the purpose. The so-called million-dollar case is well worthy of its appellation, for here is a collection of gems, singly and in com-



TIFFANY DIAMOND



DIAMOND NECKLACE

THE FOX PRIZE SILVER CUP

bination, such as seldom before was gathered in so small a space. Among the diamonds is one which, as it revolves above the remainder of the group on the golden rod which supports it, attracts almost as much attention as did the famous koh-i-noor at the London Exhibition of 1851. Somewhat larger than the latter, it weighs more than 125 carats, and represents the sum of $100,000.

EGYPTIAN MIRROR

But to many a still more attractive exhibit is a group of necklaces, valued at $335,000, composed of pearls of the purest water, and containing some of the largest and richest specimens in existence, one of them almost as valuable as that which Philip II of Spain presented to his daughter, Elizabeth of Austria. In another necklace are 42 brilliants, and in still another 550 rose diamonds, the latter with festoons and pendants, after the fashion of the Portuguese. There are also tiara necklaces, in aquamarine and topaz, each with nearly 2,000 diamonds, and representing what would seem the perfection of the jeweler's art. For a corsage ornament, the design of which is a network of maidenhair ferns, there were used 300 diamonds and 125 pearls. In another ornament, fashioned in the shape of a Spanish epaulette, and closely resembling in design a piece of old Spanish lace, are 1,000 diamonds, as many emeralds, and several yellow sapphires of brilliant lustre. A girdle of woven gold in arabesque style contains some 20 large canary diamonds of an average weight of 25 carats, and occupying a prominent place in the exhibits is a reproduction of the diamond collar worn by Marie Antoinette, from a portrait by Dronait in the South Kensington museum in London.

Other tiaras there are with wreaths of pearls and precious stones. In the centre of a diamond sun is a star sapphire of richest color, encircled with rubies, and with a serpent entwined amid the solar rays. A gold and diamond aigrette is set in a pear-shaped Peruvian emerald, its pattern suggested by the sea-urchin. Of floral designs there are several beautiful specimens, among them a Narcissus brooch, its stem of gold, its leaves of diamonds, and its flower of yellow sapphire, set at its outer edge with rubies. Another design is in the form of a spray of moss roses, with flowers of sapphires and petals of diamonds, and leaves and stems of demantodis.

Perhaps the most scholarly feature of the display is the exhaustive study here represented of the earlier artistic productions of European and Asiatic countries, as of Italy, France, Spain, Hungary, Russia, Hindostan, Egypt, and Japan, all these and other styles, some of them belonging to the fourteenth and fifteenth centuries, being either reproduced or suggested. Another feature is the careful and minute attention to detail, as in the Spanish

IN THE AMERICAN SECTION

SILVER EXHIBIT

epaulette or shoulder ornament, where threads of lace are perfectly imitated, the ribbons grouped at the top, the entire ornament forming one mass of precious stones. So with the brooches, set with diamonds and colored with precious stones, simulating in miniature the fashionable bonnets of the first empire.

In the groups of fancy articles is almost everything that can be reproduced or ornamented with precious metals and precious stones, from a match-box to a magazine rifle, including frogs, toads, and reptiles, shaped as bonbonniéres and studded with turquoise and topaz. Prominent among them is a so-called incense-burner, but suggestive rather of the incense of tobacco, in the form of a rattlesnake coiled around the neck of a duck, both of life size and modelled from nature. The body of the snake is of silver, its rattles of pearls, and its scales of Queensland opals. At the corner of the pavilion stands a Pueblo vase, its design suggested by the pottery of the ancient cliff dwellers. At the top is a frieze of magnolias, and in a combination of silver, gold, nickel, copper, and enamel work are reproduced some of the characteristic flora of the south-west. A silver dinner service set of Indian chrysanthemum pattern contains 600 pieces, and a toilet table of the style of Louis XVI is fashioned of South American amaranth. Among other articles of historic interest is a collection of trophies, with prize and love cups, including the challenge cup of the steam yacht club, and one on which is portrayed in repoussé work a tiger hunt in a Bengal jungle.

By the Glass and Decorating company, bearing the name of the Tiffany firm, but occupying a distinct and separate field, are displayed, in the northern section of the pavilion, many modes and specimens of decorative work, including such as are intended for sanctuary use. In one of the chambers is represented the interior of a chapel in chaste and impressive design. In the vestibule is a statue of the virgin, amid altar lamps and richly jewelled vestments, and on stained glass windows are depicted the descent from the cross and other scriptural figures and groups, among them a reproduction of one of Bocatelli's masterpieces. The altar is of solid marble; in front of it are symbols of the evangelists wrought in pearl, and upholding the arch in its rear are columns of Venetian mosaic. The cross is resplendent with jewels, and on either side are golden candlesticks studded with precious stones. The door of the tabernacle is covered with gold filigree, gems, and mother of pearl. In other rooms are articles of furniture, drapery, and tapestry, many of them of novel design and elaborate workmanship, grouped with a view to symphony of color, the effect of which is further increased by rays of gold and emerald reflected from the ceiling.

East of the Tiffany and Gorham pavilion, and with a frontage on the central transverse nave, is the display of New England manufacturing jewellers, representing the collective exhibits of twenty-nine firms, and with individual exhibits by a few of the larger establishments. These are contained in a tier of cases of polished oak with plate-glass panels, an arch of oak in picturesque design extending over the aisle. For the most part the articles are such as are produced in their several lines of trade, and not as at the Centennial Exposition specially made for the purpose, the space being equally divided among the exhibitors, and the groups arranged with a view to harmony of effect. With one exception all the collections are from Providence, Rhode Island, and though small in size they are choice in quality, many of them representing special lines of goods in the production of which single individuals or individual firms have millions of dollars invested, one for instance making a specialty of rings, another of watch chains, and another of trays in various patterns. While singly such exhibits would not be of special value, together they form a most interesting display, illustrating as they do the remarkable progress in this direction since the date of the Centennial Fair.

SILVER EXHIBIT

Returning to Columbia avenue, we find, adjacent to the Tiffany and Gorham edifice toward the north, the neat and tasteful structure of the Meriden Britannia company, its rich brown hues of rosewood contrasting

AMERICAN FLORAL TEA TRAY

somewhat sharply with the cream and gold of the latter. In shape it is octagonal, its sides, except for the one which contains the portico, consisting of plate-glass windows, resting on a curved base, divided by double Corinthian columns, and surmounted by low domes, the domical treatment culminating above the roof. Passing between rich draperies into a pavilion some thirty feet in diameter, its woodwork of ivory and gold, with easy chairs and carpet of light blue velvet, we find at the entrance a centrepiece of elaborate workmanship, its base of silver molded with gold and with bands of gold and chrysanthemum. Above this are portrayed in relief scenes of Indian life, with men on horseback chasing a herd of buffalo, a deer lying prostrate among a group of braves and children, and a floral design extending to the top, where is the figure of a warrior mounted on a plunging and frightened steed, with spear outstretched above a crouching panther. In an octagonal case, resting on a pedestal of ivory and gold, are many specimens of novel pattern. Next to it is the company's office, near which is a triplicate mirror, the central glass with scroll work and flat mold frame, and those at the side with a heavy framework of oxidized silver. At the other side of the pavilion is a large mahogany chest, lined with chamois leather, and containing several hundred pieces of the Savoy pattern, many of novel and original design.

SILVER VASE

CUT GLASS

Turning to the display windows we find in one adjoining the portico a decorated vase with blossoms, flowers, and leaves of chrysanthemum. At its base, where also are rich designs in flowers and fruits, silver buffaloes are pawing the ground, as though challenging each other to combat. The body of the vessel is richly ornamented, and on its branching arms, the spaces between filled in with scroll work, are seated an Indian maiden and boy. On either side of this centrepiece are trumpets and trophies in silver and gilt for presentation purposes, the largest of the latter including a bicycle cup, with costumed rider at his wheel, a yacht cup with vessels sailing through a silver sea, and a race-cup, with oarsmen in uniform, and with golden oars in hand. In the next window the centrepieces are a punch-bowl, with goblets, ladle, and tray, their design skilfully blended in silver and gilt, and a large coffee urn encircled with columns which support its outer perforated rim, above it being a circular top with engraved and polished bands. Here and in other windows are flower-bowls, cake-baskets, liqueur sets, tea-sets, lamps, candelabra, toilet sets, writing tables, waiters and trays, chafing dishes, fern bowls, and scores of other articles. Finally, on a curved and velvet covered surface in the northern window, is almost every kind of flat table ware in use at the present day.

SILVER WARE

Other attractive exhibits in the line of silver-plated ware are those of the Pairpoint Manufacturing company, contained in their white pavilion reproducing in miniature a Grecian temple of the Ionic order, with the Erectheum as the motif of the design. As to pattern, workmanship, and elaboration of decorative features, their collection forms a most creditable display. Worthy of note are their massive silver epergnes, one of them five feet high, their gold tea-sets, their silver lamps, with decorations suggestive of the colonial period, their trays and table-ware, all of them richly enamelled. Pleasing in effect is the Royal Flemish ware, tastefully illumined, and no less admired are the prize cups with their rich ornamentation; the gold and silver goblets, nut bowls, and a variety of other articles, the makers of which are favored with a location in close proximity to some of the most famous firms of the old world.

In the line of silver and plated ware, jewelry, diamonds and watches, Missouri is represented by the

GLASS AND GOLD

SILVER PUNCH BOWL

PLATED WARE

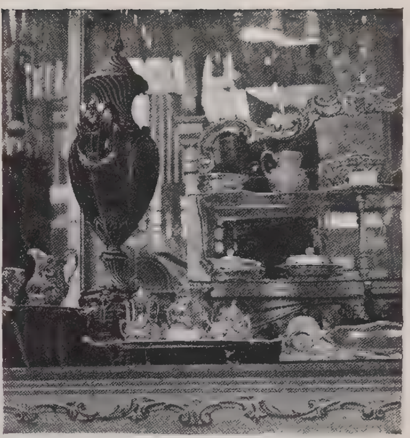

SILVER WARE

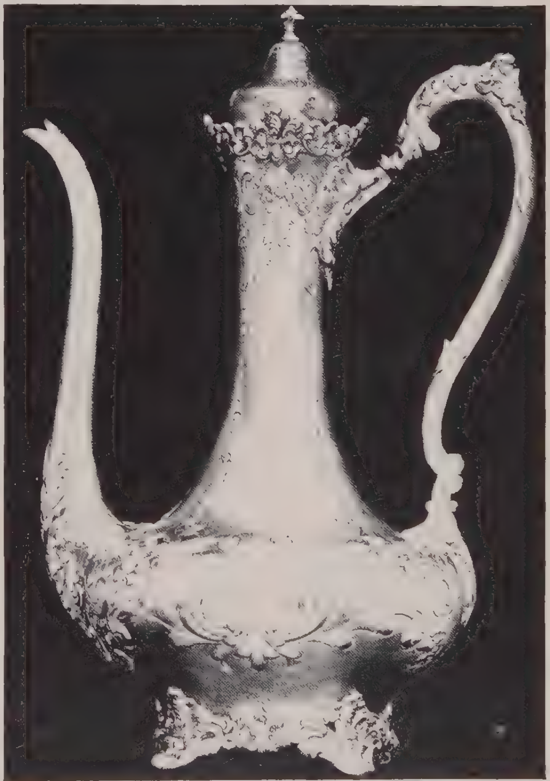
exhibit of the Mermod and Jaccard company of St Louis. For this, the pioneer firm in supplying first-class goods to the country west of the Missouri, it is claimed that the jewelry trade of the west has been revolutionized through its operations. Be this as it may, there can be no question as to the quality of workmanship displayed in its handsome pavilion, furnished, draped, and equipped so as to represent the historic era with which the earlier annals of St Louis are connected. So also with the exhibits, specially prepared for the occasion, and designed after the finest specimens of French art work, from the days of Louis IX, after whom the city was named, to those of Louis XV, in whose reign it was founded.

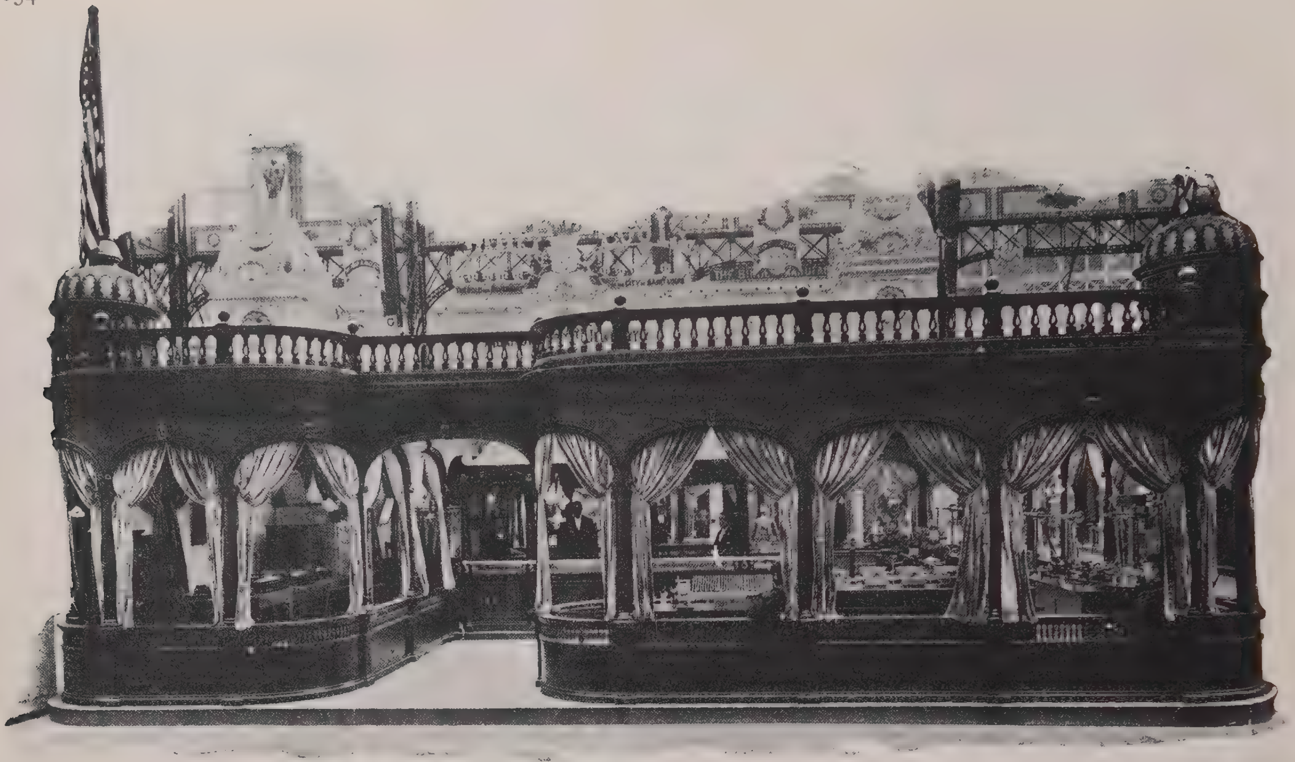
Among other creditable exhibits included in this group are those of the Manhattan Plate company of Lyons, New York, of a Bridgeport company, whose specialties are in the line of silver inlaid spoons and forks, and of gold and silver plated table ware, and of a Waterbury firm whose goods are for similar uses. Nor should we omit what Chicago has to show us, one of her exhibitors displaying catholic church decorations, and another, plated ware in gold and silver, and silver plate. Two Cincinnati companies also display church ornaments; from Boston and Newark are minor exhibits; from Freeport, Illinois, are specimens of silver filigree goods, and from Buena Vista, Colorado, come roses fashioned of purest silver.

Adjacent to the prominent jewelry pavilions and separated by a transverse nave is the department of horology, its exhibits classed, with slight exceptions, in a single group. Here is one of the most interesting features of the Fair, a collection of historic and antique watches, loaned for its present use by Evan Roberts of Manchester, England, to the American Waltham Watch company. Of sixteenth century watches there is one made by Jeubi of Paris for Queen Elizabeth; there is the hour-striking timepiece which Calvin carried, the watch with a seconds hand on its dial, by which Bunyan marked the slow flight of time in Bedford jail, and that which on a February day of 1554, recorded all too quickly the approaching hour of the doom of Lady Jane Grey.

The oldest of the seventeenth century specimens is a metal-cased alarum watch fashioned, about the year 1610, by David Ramsey of London for the monarch whom his detractors dubbed the wisest fool in Christendom. Next to it are those of Oliver Cromwell and his Latin secretary, the blind author of the *Paradise Lost*, who learned by touch the hour of day from raised points on the dial of his timepiece. An astronomical watch, with shell enamelled case was the property of Sir Isaac Newton, and at its side is the cyclometer used by George III to measure the distance covered by his carriage. In a triple metal case, bearing the date of 1771, is the watch of Robert Burns, the shell-cased watch of William of Orange, and

WATER PITCHER AND GOBLETS


BLACK SILVER COFFEE POT

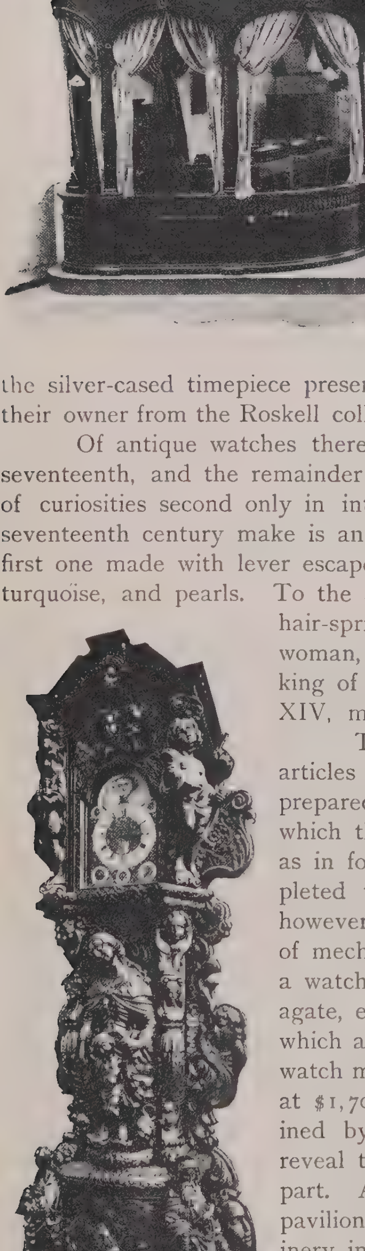


WALTHAM PAVILION

the silver-cased timepiece presented by Lord Nelson to Captain Rose, completing the treasures purchased by their owner from the Roskell collection at Liverpool, where for more than a century had been their home.

Of antique watches there are more than 600 specimens, several belonging to the sixteenth, many to the seventeenth, and the remainder to the eighteenth centuries. Here the horologist may linger over a collection of curiosities second only in interest to the one already described. On the dial of a skull watch of early seventeenth century make is an engraving of the day of judgment. Of eighteenth century watches there is the first one made with lever escapement, and not a few have gold or gold and enamelled cases, set with rubies, turquoise, and pearls. To the same period belong several cylinder musical watches, the first made with gold hair-spring, one of the first with detached lever, the only one made by the hand of woman, with leathern cover and enamelled dial, a chronometer watch belonging to the king of Spain, and a verge timepiece with the inscription on its inner case, "Louis XIV, mort en MVCCXV."

The exhibits proper of the Waltham Watch company consist of their various articles of manufacture, and except for a model of their works were not specially prepared for the occasion. For the most part it is restricted to watch movements, of which there are more than 2,000 varieties, the company having ceased to manufacture, as in former years, the completed timepiece. There is, however, a handsome piece of mechanism in the form of a watch made of quartz and agate, except for the wheels, which are made of the usual watch materials. It is valued at $1,700, and can be illumined by electricity so as to reveal the workings of every part. Along two sides of the pavilion is a range of machinery in motion, demonstrating the advancement made in the methods of watch manufacture from the days of the Centennial Exhibition to the present time.



CARVED CLOCK

CLOCKS

The company claim to be the originators of what is known as the American system of watch manufacture, whereby machinery is used for the work which was formerly done by hand. To illustrate the progress in this direction, the machines here in operation are similar in construction, but run with a minimum of operatives. There was formerly, for instance, one operator for each machine, where now is a combination of four machines in charge of one person, who can take care of six of these combinations, doing the work of twenty-four persons, and in many respects doing it better. Another machine is of different plan, and instead of handing the work from one to the other, turns round and brings the completed work to the operator, then is re-filled and starts on its round again. In all these machines it has been demonstrated that they can perform the work of that part of a watch which requires the utmost delicacy of touch, and which it was thought until recently could only be done by hand.

CEILING OF ART FURNITURE PAVILION

Another illustration of progress in the manufacture of American watches within the past few years is furnished by the Waterbury Watch company, whose pavilion, with its Moorish outlines and colonial coloring, is one of the landmarks of the horological section. In the interior are displayed to excellent advantage the various products of the factory. In hectagon cases, with revolving centres, at the bottom of each of the towers are shown gold-filled watches in various colors; likewise a large collection of silver and nickel cased watches, of which there are between four and five thousand. With much taste is also arranged a variety of plain and colored enamelled dials. But the crowning feature of the display, and forming one of the principal attractions of the Manufactures building, is the famous Century clock, which stands in the rear of the pavilion. It is contained in a large case of black walnut, polished and adorned with figures representing American history from the days of Columbus.

To the pavilion of the Self-winding Clock company of New York was assigned a liberal space in the horology department. Here is another remarkable clock, by which are controlled all others in the Exposition, together with the thousands of clocks elsewhere connected with the company's time service. At about eleven by Chicago time, the hour of noon in the city of Washington, is rung each day on a chime of bells

DRESS GOODS

at a signal from the naval observatory at the national capital. Electric chiming apparatus and clocks also give forth their music at intervals. There are so-called programme clocks by which signals are given for starting trains and for ringing bells at stated intervals where needed, as in school and college class rooms. There are other time-keeping and time-transmitting devices of cunning mechanism, and on the walls of the pavilion are scores of self-winding clocks, their construction and workings displayed in a single time-piece wound up once a minute. By Sir Isaac Newton it was said that the secret of perpetual motion would some day be discovered by a fool. Let the clock men and the electricity men look to their laurels.

Of other companies and firms in this department my limited space forbids other than passing mention. The Ansonia and Geneva Clock companies of Chicago, the Cyclo Clock and Non-Magnetic Watch companies of New York, and the Keystone Watch-case company of Philadelphia have all furnished creditable exhibits. Nor should we omit the Philadelphia firm of H. Muhr & Sons, among whose display of watch-cases is the largest gold thimble ever made, and at its side, the smallest silver thimble, fitted for Liliputian fingers. In some of the exhibits, as also in the jewelry section are specimens of regalia, including the uniforms, vestments and badges pertaining to military, benevolent, and secret civic orders affording a very interesting display. By the Henderson Ames company, for instance, are represented on dummies the uniforms of hussars, of the masonic order, of the knights of Pythias, the Eastern star and shrine, and the daughters of Rebecca, the last in robes of purple and gold.

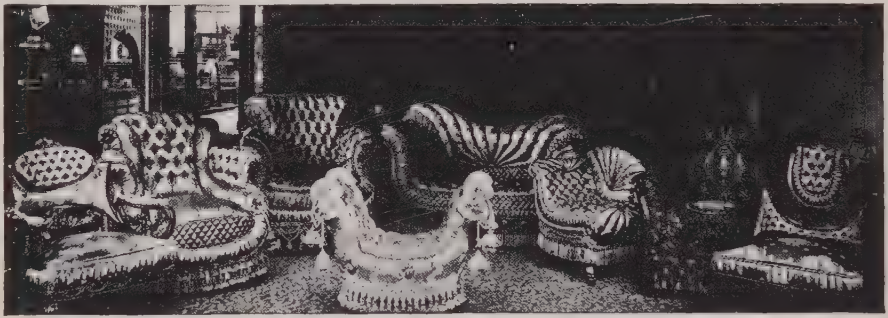
Of cottons, linens, and other vegetable fibres, all classed under a single group, and forming with silks and woolen goods in the groups adjacent the main display of textile fabrics, there are sixty-six exhibitors. Beginning with yarns and twines, the cotton collection includes all the usual classes and grades, the New England factories contributing the bulk of the display, though Philadelphia mills are liberally represented. Apart from that city Pennsylvania has but a single exhibit. Of New York mills there are three, one producing printed cottons, another cotton lace curtains, and a third miscellaneous articles. The south and west have each but one exhibit, the former from Trion, Georgia, and the latter from Chicago.

COLLARS AND CUFFS

CLOTHING

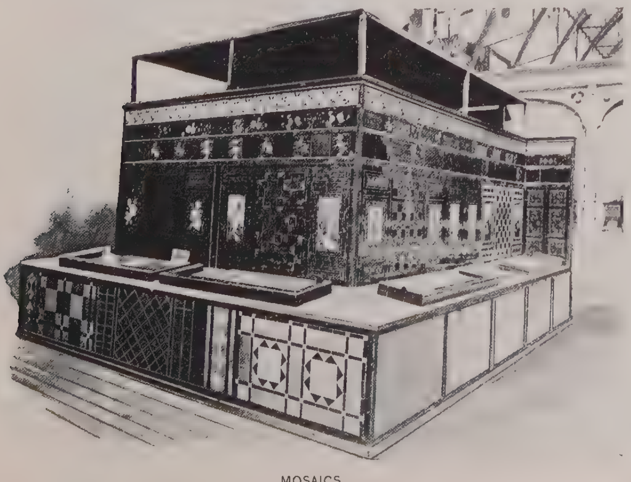
TEXTILE EXHIBIT

While to the casual visitor our textile fabrics are not the most attractive features of the American section, there are several booths before which the passer-by is apt to linger. To the more thoughtful observer, not only to the cotton manufacturer or merchant, but to all who love to note and study the industrial progress of the United States, there is much of interest in these plain unpretentious groups, where, as I have said, the ornamental has in a measure been sacrificed to the utilitarian. Here is represented in this direction the outcome of a century's growth, for about one hundred years ago was erected in Rhode Island the first of New England cotton mills. Here we have almost the inception of American manufactures; for apart from such as were intended solely for domestic use, little was accomplished in this direction until more than a decade after the close of the revolutionary war. Saw-mills, grist-mills, and tanneries there were, and during the later colonial period iron was largely produced in New England and other districts; but the restrictive policy of the mother country, almost as rigid as that which lost to Spain her New World empire, choked many a promising branch of enterprise. For years after independence was achieved, agriculture and stock-raising were the mainstay of the young and struggling states, impoverished by one of the most cruel wars recorded on the page of history.



FURNITURE

In the closing years of the eighteenth century, the United States, which in 1892 produced cotton fabrics worth hundreds of millions of dollars, were but just beginning to work their raw produce with machinery, of which models had been secretly obtained from England in evasion of her penal statutes. In 1800 the little Rhode Island factory still represented alone this branch of industry, using but a few thousand pounds a year of cotton yarn; but in the following decade remarkable progress was made. In 1806 there were fifteen mills at work, twelve in Rhode Island, two in Massachusetts, and one in Connecticut, consuming in all a yearly total of 300,000 pounds of yarn. By 1810 the number of factories had increased to nearly one hundred, with more than 70,000 spindles in operation, and five years later the consumption of raw cotton had increased to 90,000 bales, with an invested capital of $40,000,000 and 100,000 operatives, of whom ninety per cent were women and children. The duty on imported cottons was 27 per cent, and for many years remained at about that rate, the volume of manufacture increasing rapidly until the civil war. After the close of that episode the output continued to increase, though with some fluctuations, especially after the financial crisis of 1873. For 1890 the cotton crop of the United States exceeded 3,600,000,000 pounds, of which more than two-thirds was exported, less than 1,200,000,000 being used by New England and other mills. Great Britain was our principal customer, taking nearly one-half the entire crop; but sending us in return, notwithstanding our protective tariff, a larger quantity of manufactured cottons than we ourselves export to all foreign lands. Such in brief is the history of one of the leading industries of the United States, representing as illustrated at the Fair, an annual production of $350,000,000 or more of fabrics made entirely of cotton, or with but slight admixture of other substances. As to the possibilities of this industry, it need only here be mentioned that at the opening of the civil war the manufacture of cotton had realized for British mill-owners



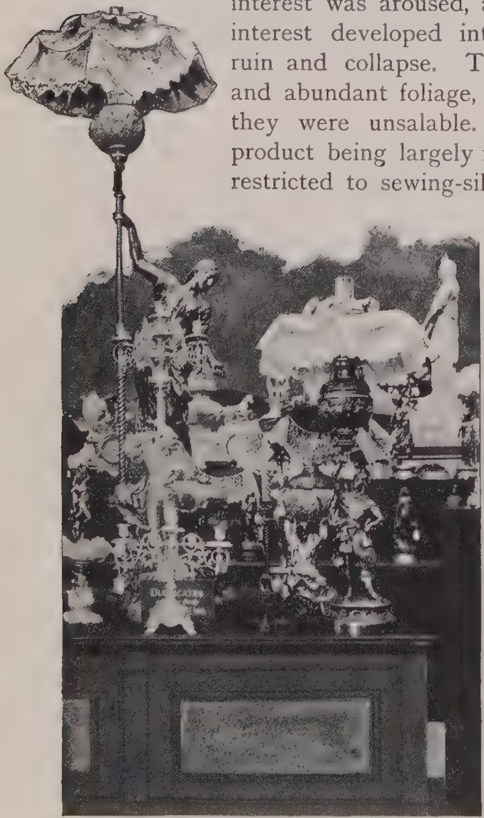
MOSAICS

ROCHESTER LAMP PAVILION

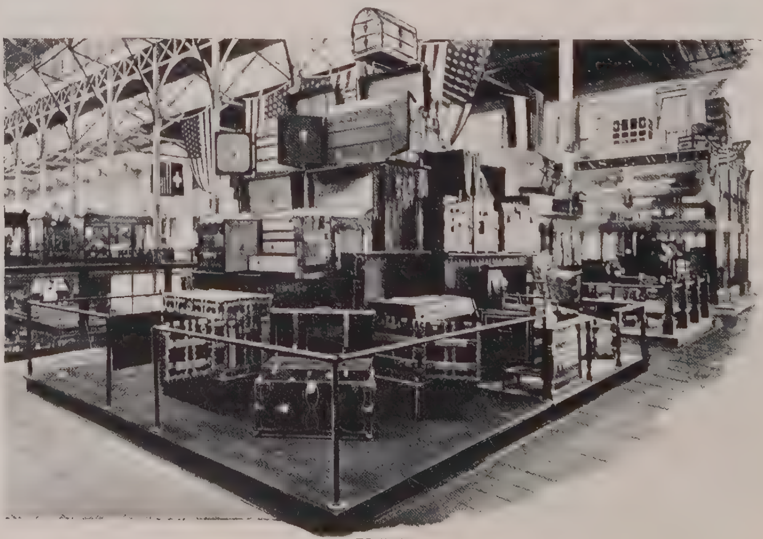
a profit of $5,000,000,000, almost entirely from raw material imported from the United States.

Of silks there are manufactured in the United States more than in any country in the world, with the single exception of France, which produces nearly one-third of the total supply of silken fabrics. Early in the seventeenth century raw silk was produced to a small extent in Virginia, and it was largely with a view to encourage this industry that James I published his famous *Counterblast* against tobacco, urging instead the cultivation of silk, offering bounties for its production, and making compulsory the planting of mulberry trees. But all in vain. The colonists would neither toil nor spin to please their monarch, but to make money for themselves, and that which made the most money was tobacco. It was not until more than a century later that the first package of colonial silk was taken to England by the founder of the state of Georgia, and there fashioned into a dress for Queen Caroline. In 1750 a small factory was built in Savannah for the reeling of silk, and for twenty years afterward exports averaged some 500 pounds a year. The little that was produced during the revolutionary era passed into domestic use, and after the close of the war sericulture vanished from the land, soon however to be renewed on a larger scale.

In 1810 skein and spool silks were first made by steam power, and two or three decades later the production of raw and manufactured silks became one of our leading industries. Largely through the efforts of one Peter S. Duponceau societies were formed, books were published, and new machinery introduced; public interest was aroused, and the subject brought before the attention of congress. Presently the interest developed into enthusiasm, and the enthusiasm into mania, followed by wide-spread ruin and collapse. Thus cuttings of the Chinese mulberry, introduced for their rapid growth and abundant foliage, were worth in 1839 more than their weight in silver, in the following year they were unsalable. Meanwhile, however, manufactures were steadily increasing, the raw product being largely imported from China and southern Europe. For a time they were mainly restricted to sewing-silk, dress-trimmings, and ribbons, and it was not until 1855 that the first spun silk was made. During the war this industry grew apace, fostered by a protective duty on fabrics and the free admission of material, Paterson, New Jersey, alone having nearly fifty factories, with many



LAMPS AND BRONZES



TRUNKS

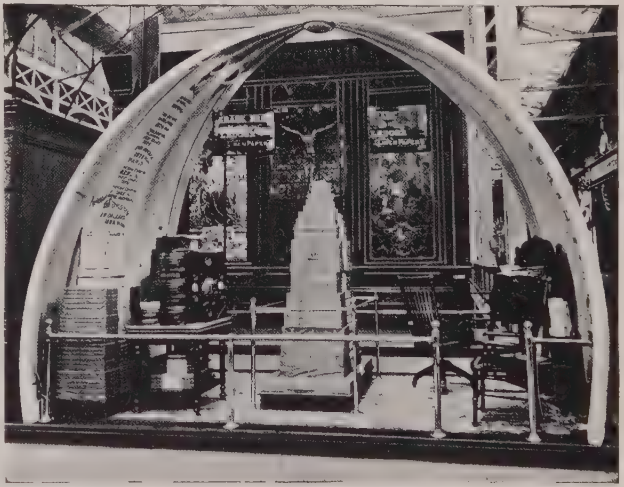
ARTISTIC FURNITURE

others in the middle and New England states. At the Centennial Exposition the home display of dress silks, in many colors and designs, rivalled, and as some would have it, excelled the French exhibits. For 1876 our production of silk goods was valued at about $20,000,000; by 1880 it had increased to $34,500,000, and for 1892 was probably not less than $60,000,000. Nevertheless we continue to import very largely of foreign silks; for that a dress should be cut from home-made silk, or contain even home-made trimmings or home-made buttons is something that the world of fashion has not yet learned to tolerate.

Of the progress made within recent years in quality no less than in quantity, we have sufficient evidence in the exhibits of silk and silken fabrics contained in the hall of Manufactures. While of smaller size than its adjacent sections devoted to cotton and woolen goods, this collection is grouped in more artistic fashion and is no less comprehensive than either. Beginning with raw silk as reeled from the cocoons, we have the thread in skeins or on spools. There are plain and figured silks, woven and printed, with satins velvets and serges, ribbons of many patterns, trimmings bindings and braids, crapes and gauzes, cravats and scarfs, handkerchiefs and hosiery, laces and veils, and whatever else is made or partly made of silk contributing to the display.

More than forty exhibitors are represented in this collection, some by a single line of goods, as dress-silks, trimmings, or ribbons, and others by several lines. Of these nearly one-half are New York manufacturers, whose wares consist largely of dress-silks, ribbons, and trimmings. Paterson, still termed the Lyons of America, has but three exhibits, one each for its dress silks, ribbons, and braids, with four others in New Jersey for similar classes of goods, mill-owners showing a disposition to remove to New York where skilled labor is more abundant. Four Philadelphia and as many Chicago firms represent various kinds of fabrics, as do the Connecticut and Massachusetts factories, which complete the list.

By a Chicago company an exhibit is made beginning with the egg of the silk-worm, the worm itself, the moth, and the cocoon, and thence passing through various stages to the finished fabric. Another interesting display is in the form of a railroad train, constructed of eight thousand spools of silk, its wheels in black, the bell of its locomotive in gold, while from the smoke-stack floss silk issues in colors shaded from black to white. By other Chicago factories, and by several New England mills, are creditable exhibits of dress goods, serges, hosiery, braids, linings, mittens, and other miscellaneous articles.


PAPER

A PAPER PAVILION

The exhibits classed under the headings of "woven and felted goods of wool and mixtures of wool" form one of the largest groups in the hall of Manufactures, with 110 exhibitors, and with additional exhibits in the gallery, to be mentioned later in this connection. Included in this section are woolen yarns, blankets, robes, and rugs, doeskins, cassimeres, and broadcloth, cloakings, flannels, and dress goods for men and women; these are all of wool, but some of them repeated in other classes in the form of worsted goods or admixtures of wool and cotton. There are felt goods in many varieties, from women's hats to rubber shoe linings; and there is a large assortment of small wares, as bindings, beltings, and braids, fringes

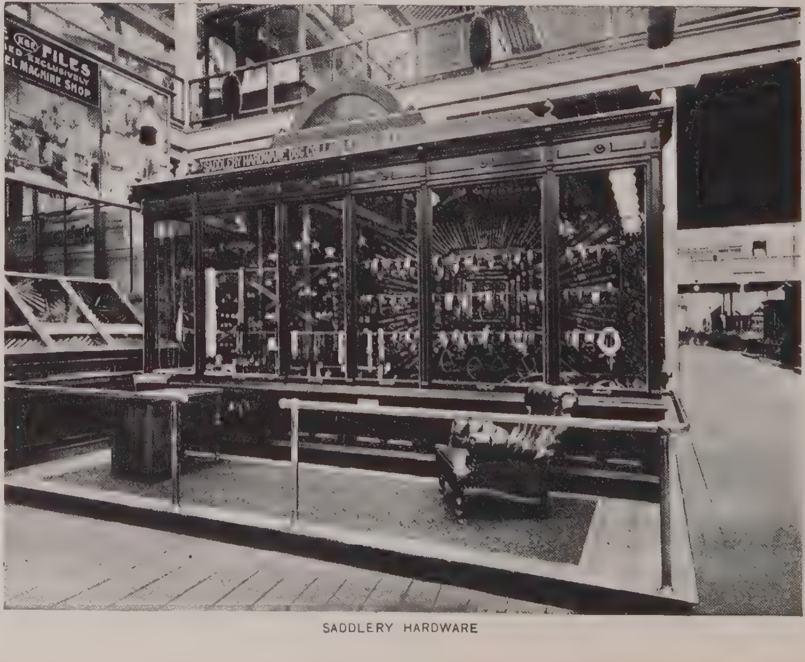
STOVES

and gimps, cords and tassels, dress trimmings and embroideries.

Of the products of New England factories, or of the mills of Pennsylvania or New York, it is unnecessary here to make other than passing mention, for since the earlier years of the present century these mills have supplied, as still they do, the bulk of our woolen fabrics. By one of the Rhode Island establishments are displayed, with many improvements and additions, some of the same classes of goods that were made when the mill was opened in 1801, while a New York mill shows the progress achieved in quality of fabrics since it was first set running in 1836, when our entire production of woolens was less than is now manufactured in many a New England town. Apart from New Jersey and the states and sections mentioned, our woolen industries are but scantily represented at the Fair, through lack of space rather than from indifference. The Pacific west, for instance, with a score at least of mills and an output valued at several million dollars a year, has only two small exhibits, one each from Denver and Oregon City. The nearer west is somewhat better represented, Wisconsin having four exhibits and Illinois three, with one each for Minnesota, Michigan, Mississippi, Indiana, and Ohio. The entire south has but a single display, that of a factory at Charlottesville, Virginia, working mainly on goods for military and civic uniforms, by which were made the coat cloths of the Columbian guards.

Thus it will be seen that our woolen industries are spreading throughout the west, though probably not one-third of its mills are represented at the Fair. If as yet they do not compete largely with eastern mills, they threaten to do so at no distant day. Wisconsin, for instance, has an excellent display of yarns and fabrics, while the blankets, robes, and shawls of a Minneapolis factory are rich in color, soft of texture, and as to face and finish will bear comparison with those of eastern make. Among the communities of the Pacific coast, with their more expensive labor and fuel, the pressure of eastern competition is more severely felt than in mid-continental states. Of their enormous wool-clip, not more than one-fourth is utilized by local factories, and still, as in former years, they are content to pay freight on the remaining three-fourths, together with the refuse which it contains, repurchasing perchance a considerable portion in the shape of finished fabrics, with all the added charges of manufacture, commission, and carriage.

Notwithstanding over-production and glutted markets the woolen industries of the United States have developed within recent years with a steady and permanent growth. From $300,000,000 in 1880 the value of output increased to about $400,000,000 in 1892, and against 180,000 operatives in the former year there were probably 250,000 in the latter,



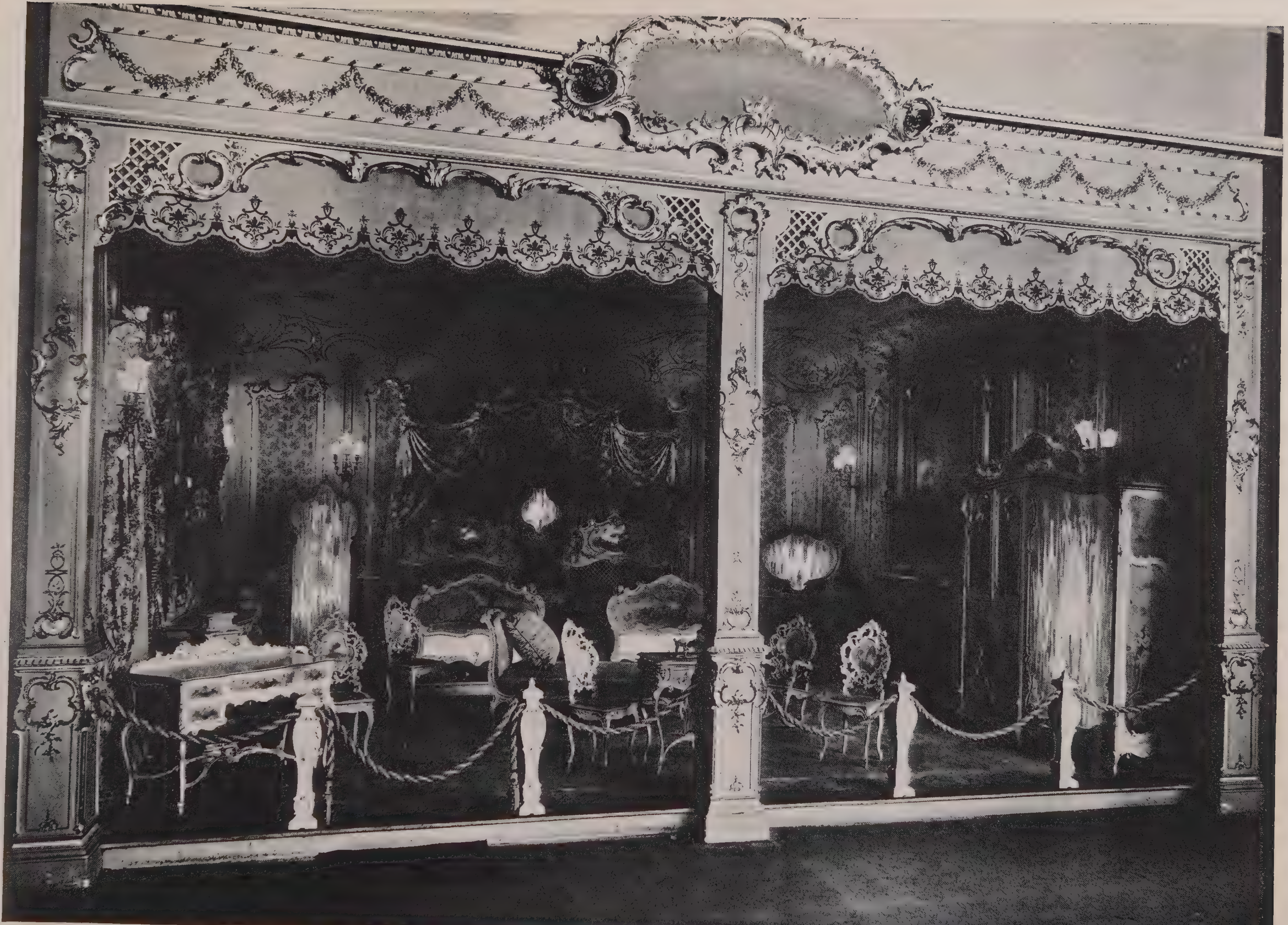
SADDLERY HARDWARE

this being the largest number employed in any branch of manufacture, except for cottons and ready-made clothing. Meanwhile a considerable decrease in the number of factories indicates a growing concentration among the larger establishments; nor is this to be wondered at when we consider that even under the most favorable circumstances our woolen mills do not return on an average more than six per cent on the invested capital, and that in seasons of extreme depression they must either be closed or run at a loss.

Of ready-made clothing our home manufactures represent an annual valuation of more than $300,000,000, and a distribution in wages of about $70,000,000. As to what has been accomplished in this direction, specimens may be seen in the clothing and costume section of the textile groups, though in common with some other classes of textiles, as jute and ramie fabrics, laces, embroideries and trimmings, including also oil-cloths and articles made of asbestos, most of these exhibits are contained on the gallery floor. A somewhat remarkable display is that of a so-called Sanitary Woolen System company, for whose wares, in the line of knit-goods and hosiery, it is claimed that precautions as to materials, process and pattern guard against danger to bodily health.

AN ELECTRIC FOUNTAIN IN ACTION

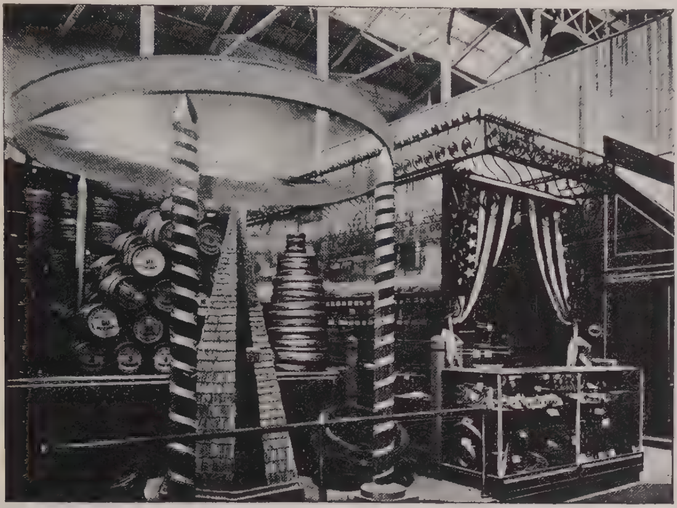
The remaining space in the northeastern quarter of the Manufactures building is devoted to exhibits of furniture and interior decorations, gas and lamp fixtures, wall papers, enamelled ware, sanitary, heating, and cooking apparatus, refrigerators and cutlery. The decorations of wall and ceiling, the draperies of bed and mantel, the artistic treatment of doors and windows, halls and staircases, are object lessons which the home-loving world, especially the female portion thereof, is not slow to comprehend, and perhaps no portion of the Fair exhibits is examined with closer criticism. In some of these pavilions there is nothing to indicate that their contents have been arranged with a view to securing purchasers; they rather resemble boudoirs in which silk and satin draperies and canopies draw attention from the more solid specimens of workmanship. This may be noticed in the exhibits of several firms whose specialties are in the line of metallic bed-



PAVILION SHOWING LOUIS XV FURNITURE

steads, prominent among which is that of the Whitcomb factory, while others are filled with goods intended merely for personal or other ornament, as with a New York firm which makes an elaborate display of flags and banners, church vestments and regalia.

Elsewhere in this section is an example of the subdivison of the business of interior furnishing and decoration. First there are makers and importers of barbers' supplies, one of the firms providing elaborate furniture in this line. Others there are whose specialties are saloon and billiard fixtures, a New York company showing a complete bar-room, with floor of tiling, walls lined with mirrors, and a rich array of glass ware on the side boards. A Chicago firm has a choice display of billiard and saloon furniture, and the Brunswick-Balke-Collender company, has, in addition to its costly tables and apparatus, a collection of ivory in its natural state, including two immense Zanzibar tusks, and the cavernous skull of the elephant from which they were taken. Among other specialties there is a pavilion in which are displayed the cactus in its several stages of growth, together with the articles made therefrom, as tables, stands, easels, frames, mantels, music racks, inkstands, napkin-rings, and canes.


WIRE

It is not unusual in these days for housekeepers to discard woolen or other carpets, rugs, and textile hangings, covering their floors and walls with the parquetry goods now largely manufactured in this country. To a certain extent these goods are recommended by physicians for use in floors, wainscotings, walls, and ceilings, on the ground that pure, clean woods do not convey impurities and disease germs, nor aggravate troubles of the throat and lungs. One of the most extensive manufacturers of this line of goods is a Philadelphia firm, whose pavilion is a striking display of elaborate and rich designs in inlaid woods. As a centre for the manufacture of general household furniture, Grand Rapids has a well deserved reputation, and among the best exhibitions is that of one of its furniture companies, while among the largest is the collection of a Chicago firm.

Of lighting apparatus there are many varieties and designs, from coach lamps to massive chandeliers and candelabra, brass and iron lamps for use in private dwellings and pleasure grounds, and all the modern appliances evolved through the discovery of electricity as a lighting agency. These are displayed in dozens of pavilions, prominent among which is that of the Rochester Lamp company, opposite the French section. Among its collection of metal and porcelain lamps, covered by airy shades of silk and lace, is the one for which was awarded a medal at the Paris Exposition of 1889; but even this does not compare with a score of others. Near one corner a huge buffalo's head is overshadowed by a large lamp of exquisite workmanship. Another attractive display shows the roof and sides of the pavilion constructed of richly colored stained glass.

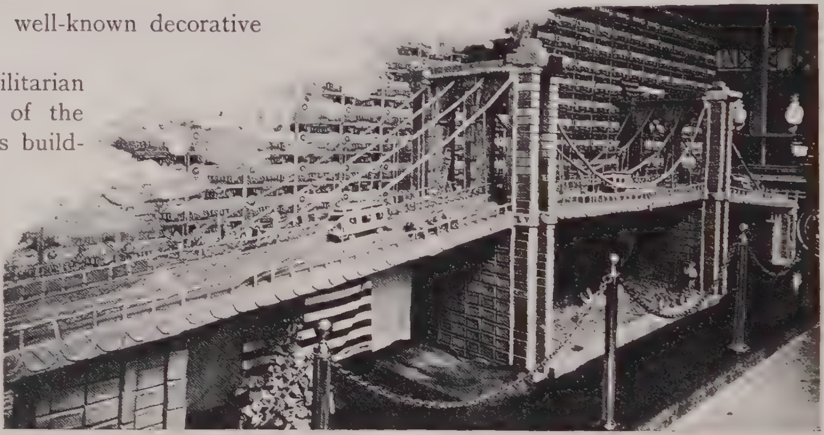
Another attractive pavilion is that of five prominent members of the National Wall Paper company, containing such perfect imitations of laces and silks, tilings, antique metal work, medallions, and reproductions of statuary, that it would seem as though the paper manufacturer herein had seemingly usurped a portion of the domain of art. The pavilion itself, which is of the renaissance order, is a rich combination of lincrusta walton, ivory, and gold. Through a

VASELINE EXHIBIT

SOLUBLE TABLETS

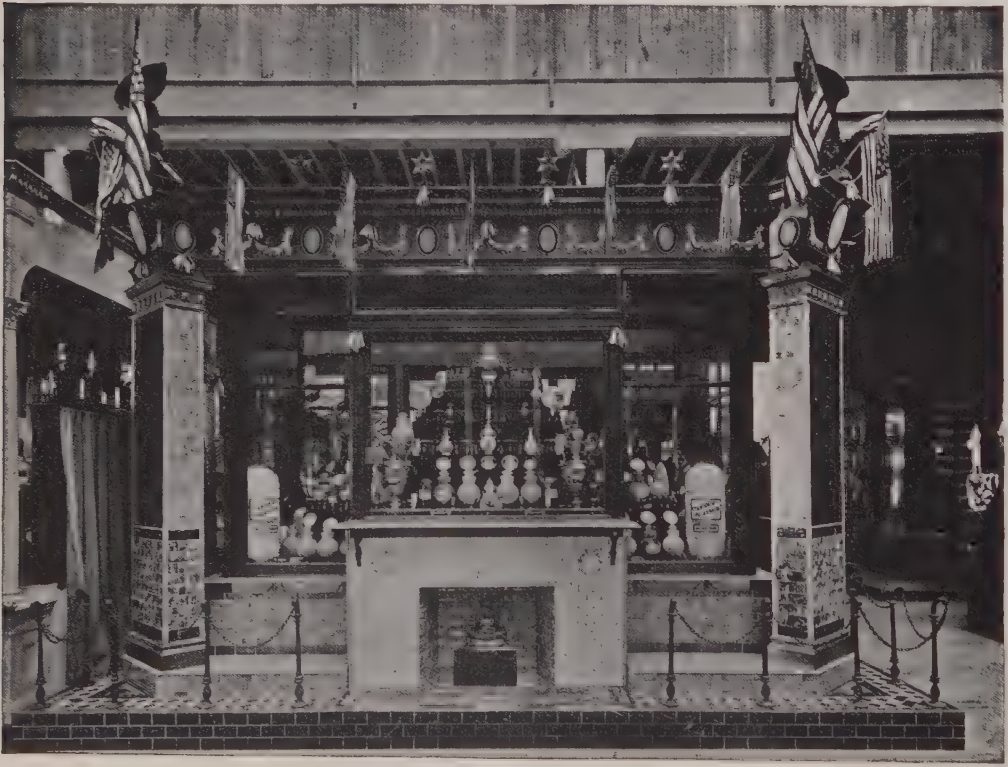
central court, the visitor enters the chambers opening from it, one of them decorated in the empire style in papers, machine and hand made, and with silk hangings, which harmonize best with their effect. In another room is an exhibit of satin-surfaced pressed papers, elaborate in Italian and French designs, with leather wall papers, embracing lacquered metal, ivory and canvas-faced metalized hangings; hand-printed chintz damask and tapestry papers, and a complete collection of lincrusta walton. In a third are broad friezes ornamented with wisteria vines, lilacs, and wild roses, the woodwork being finished in ivory and gold. Here and in adjacent booths are also specimens of pressed and leather papers, with some beautiful specimens of wall papers, especially in satin damasks. Among the notable illustrations of block printing is an allegorical design, specially prepared by the well-known decorative artist Walter Crane.

We will now turn to the more utilitarian department toward the south and east of the Manufactures hall, where he who is building a house will find the best and most modern apparatus for flushing, plumbing, and other sanitary purposes. Here also are appliances for securing an even temperature, for perfect ventilation, and for avoiding danger from sewer gas. Flushing is accomplished in a score of different methods. Of kitchen and bath-room fittings there are tubs and sinks of soapstone, porcelain, and tin, and in parlor and other furniture there are many beautiful specimens of enamelled wares.



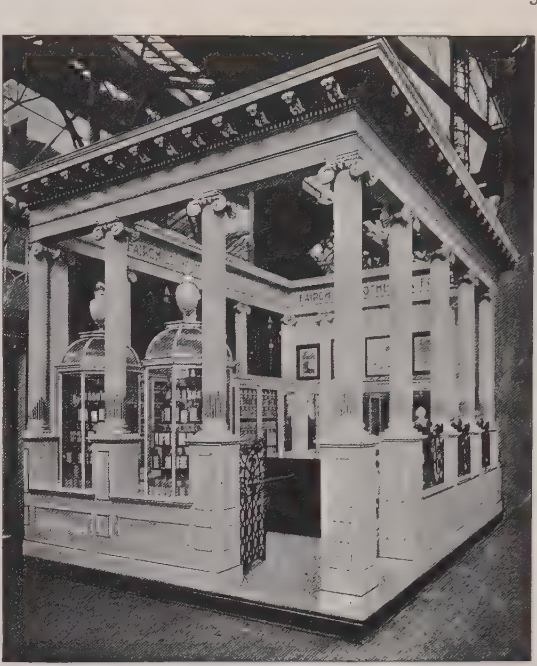
BROOKLYN BRIDGE IN SOAPS

The large space devoted to stoves, furnaces, ranges, steam, and other heating appliances indicates the magnitude of these classes of manufactures. Here also are shown the various stoves and ranges which burn gas and petroleum, as well as gas logs, the last coming largely into use. The Michigan Stove company has in the shape of a pavilion a mammoth stove, forming one of the most unique exhibitions on the floor. In contrast to this, and as an historic curiosity, is a little square stove, loaned

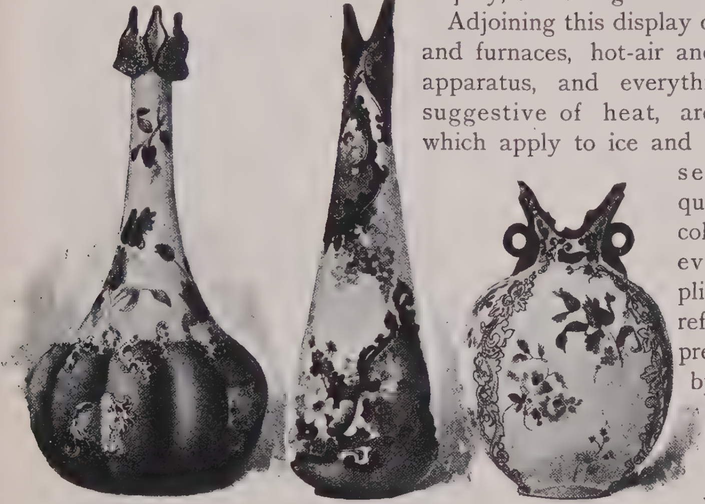


CHEMICALS

from a private Chicago collection and said to have been used in 1693 at the first convent established in Quebec. A Milwaukee company has a sample of the first Stewart stove, made in 1838, and almost as primitive in pattern. A Chicago firm has provided for itself headquarters of tasteful design, and near by are such old friends as the acorn and gold coin stoves, while a St Louis factory, producing the less familiar buck stoves, throws open a resting place whose invitation is difficult to resist. To the left of their pavilion is a fireplace of 1776, with ashes upon the hearth, and a swinging crane within; to the right is one of the first stoves made in 1846, and between these ancient specimens is the finished product of 1893. In the special line of radiators a Chicago company has the largest display, exhibiting over 160 styles.

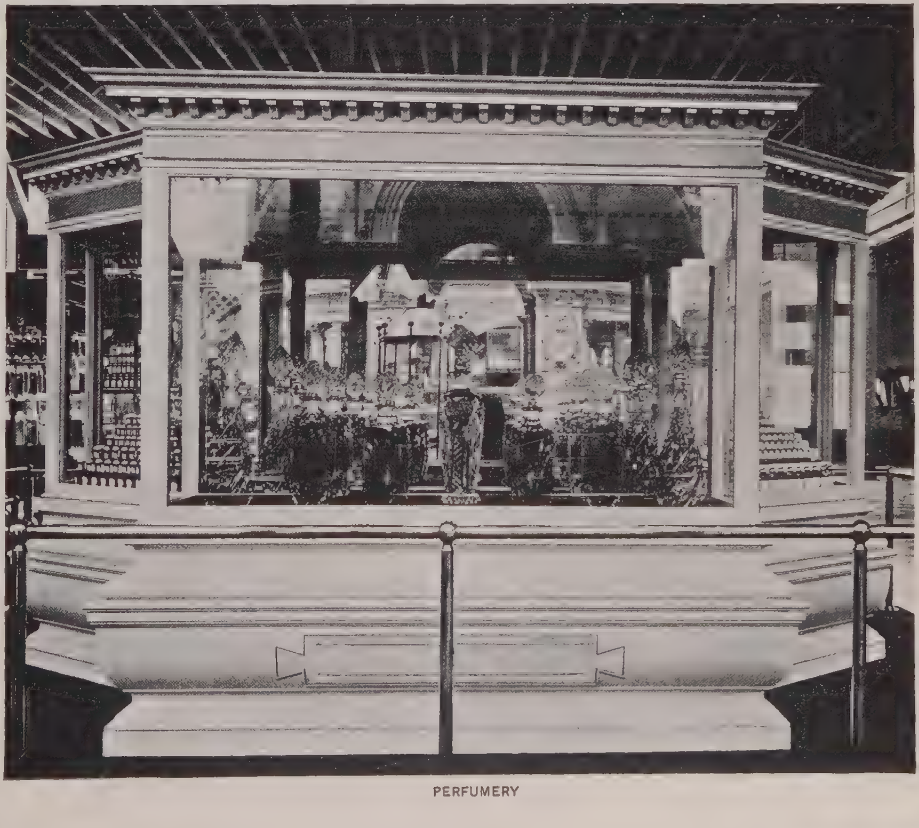

CHEMICALS

Adjoining this display of stoves and furnaces, hot-air and steam apparatus, and everything else suggestive of heat, are those which apply to ice and the preservative qualities of cold. Here every appliance is at hand, from the plain ice box to the complicated refrigerator with half a dozen walls. Miniature specimens, pretty enough for a piece of household furniture, stand side by side with mammoth structures for the preservation of meat and beer. Muskegon is the headquarters of the establishment which produces the Alaska brand, and a striking exhibit it makes under its refrigerator pavilion. Elsewhere it is plainly demonstrated that Michigan, Wisconsin, Minnesota, and Illinois have taken the lead in this line of exhibits.


SPECIMENS OF CROWN MILANO WARE

To describe the exhibits of vaults, safes, hardware, edge tools, and cutlery, would be to write a bulky catalogue of familiar articles, in the manufacture of which, however, there are almost daily improvements. The Oliver Ames and other companies have displays in their special lines which are interesting to the casual observer no less than to the farming community. Manufacturers and dealers in mechanics' tools, in screws, shears, knives, hammers, and razors may here observe how necessary it is for them to concentrate their energies within sharply defined limits. In cutlery a razor company, of Worcester, Massachusetts, fills a large case with superior specimens of its goods, arranged round a mammoth wheel formed of razors. There are specimens of check and spring locks which will close a door without slamming; there are appliances for locking a window, whether open or closed, and in the line of general hardware there are exhibits without number.

Among the cases and pavilions filled with small firearms of American make, the Remington booth presents an imposing aspect, its elaborate central display flanked with stacks


PERFUMERY

AMERICAN CUT GLASS

GLASS AND SILVER WARE PAVILION

BRONZES

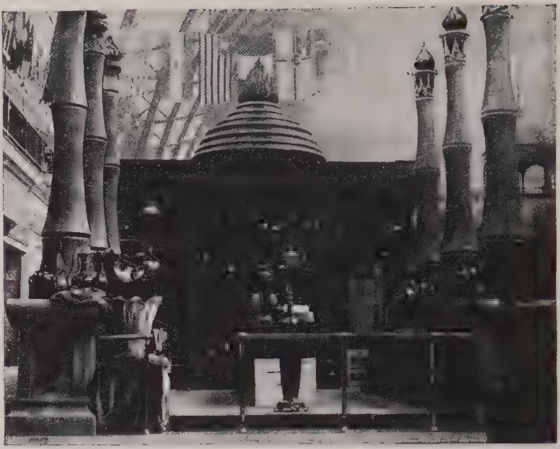
of rifles. Opposite is the exhibit of Smith and Wesson, their cases containing nearly 200 beautifully finished revolvers representing the various styles manufactured. In one of these cases all the weapons have pearl handles, some of them being artistically engraved and inlaid with gold. The exhibit also includes specimens of the firm's regular output, with a practical illustration of the process of manufacture in parts, and the various tests to which they are submitted. The various styles of revolvers are fashioned into the design of a wheel, above which are two finely constructed rifles, and the different portions of the mechanisms are worked into the border of the figure. There are also men in attendance whose duty it is to demonstrate the superiority of the Winchester and Spencer repeating arms.

Beyond this section and in the extreme northeastern corner of the building, are the wire goods, ranging from a strand as fine as silk to massive bridge ropes and submarine cables. The exhibit of a Trenton company is on an imposing scale, illustrating connection with such undertakings as the construction of bridges, cable railways, and various submarine lines. A specimen of the street cable used in New York, one and a half inches in diameter, is wound on a frame, and there are four sections of the wires used in the Brooklyn bridge. Coils of submarine cables, and all apparatus pertaining to such systems as are mentioned above, form a foreground to a painting of the New York and Brooklyn bridge, whose builder lost his life in its construction. Upon a stand in front of the bridge is the model of a ship with tackle of wire.

Opposite this exhibit is a lofty tower of Columbian aspect, surmounted by an eagle, its base formed of coils of cable wire, above which is an octagonal glass case with iron, steel, and copper wire of all kinds, and the concave roof supported by metal pillars. This tower calls attention to the exhibit of telegraph, telephone, and cable wires, wires for baling hay, for binding books, and for clothes lines, wire fencing, watch, clock, eye glass, and furniture springs, brush and umbrella wire, and wire of iron, copper, and steel, flat, square, and round. The various stages of manufacture are also illustrated, from the crude metal to the finished article. In the line of wire matting, another company has a large exhibit of figures and a neat illustration, claiming that it is putting a broad band

LAMPS

GLASS AND SILVER


ROOKWOOD POTTERY

of its wire goods around the globe. Wire screens for doors and windows are the specialty of a Maine firm, while a Massachusetts company presents in the walls of its pavilion a new description of wire cloth, which appears better fitted for an artists studio than for common use. It is made of fine steel wire, and covered with a chemically prepared solution, varying in thickness from one-sixteenth to one-eighth of an inch. For this fabric it is claimed that it may be as easily stitched as canvas, that it withstands a temperature of 230° before igniting, that it is frost and rain proof, resists a pressure of 100 pounds to the square inch without fracture, and being a non-conductor, renders a building warmer in winter and cooler in summer. It is certainly a beautiful fabric in appearance, as rich and delicate as the finest stained glass.

One of the oldest manufacturers of wire goods in America shows samples of what is claimed to be the first wire netting made in the United States by power machinery, and exposed for more than twenty-five years in the open air; also woven fencing used nearly as long, and about 100 descriptions of their wire cloth, branded as gold, silver, brass, copper, galvanized, and pearl. In the dome of the Horticultural building is a wire summer house from the same hands, ornamental fences, gates, flower stands, and chairs, while at the terminal railroad station are about three miles of its woven fencing inclosing and dividing the railroad platforms. There has been used by the Exposition, under the glass roofs of various buildings, a large quantity of wire netting to prevent glass from falling which might accidentally become dislodged.

Westward from the wire display toward Columbia avenue is a section devoted to exhibits of scales, weights, and measures; also a collection of water meters, near which is a rustic pavilion of petrified wood from Arizona. Within are sections of the trees, cut through in all directions so as to furnish slabs for tables, parlor ornaments, and cabinet specimens. Situated in Apache county, Arizona, and known as Chalcedony park, there are large deposits of petrified tree sections, interblended with agate, jasper, jade calcite, and amethyst. They are usually found projecting from volcanic ash and lava, which is covered with sandstone to the depth of from twenty to thirty feet, and lie exposed in gulches and basins where water has worn away the sandstone. Petrification possibly resulted from the trees being submerged by hot geysers bearing silicon in solution. While the quantity of material found is great, the sound sections are limited, and as the substance is only three degrees softer than a diamond, making costly machinery necessary to cut and polish it, the wood is rare and expensive.

Chemicals, perfumery and toilet articles are grouped in the vicinity, the soap dealers having an elaborate display. A much advertised article monopolizes considerable space with a picture of the boat named after it which crossed from New York to the Azores in the summer of 1892, with the boat itself fourteen feet long, and two feet depth of hold. A Chicago firm has an imitation in soap of Brooklyn bridge, some thirty feet long and weighing 1,500 pounds, with vehicles and pedestrians crossing in long procession, and beneath a vessel plowing the waters of East river.

LOUIS XV CLOCK

POTTERY

TERRA COTTA

SAILOR

Crossing Columbia avenue we enter the section of glass and glassware, ceramics and mosaics, a somewhat meagre exhibit, considering the importance of these industries. Pittsburgh manufacturers of pressed and blown ware make one of the largest displays, not only of white glassware but of mirrors. In cut glass, manufacturers of New York and Ohio illustrate in artistic fashion the beauty of the finer grades, when tastefully arranged. In the space allotted to the United States Potters' association is, with one exception, a complete exposition of the ceramic industries of the country, including both the manufacture and the decoration of wares, that exception being the Rookwood pottery, of Cincinnati, which has a place in the jewelry section. The enclosing walls and columns are made of fire clay, the former being of a warm yellow and brown, and the latter of a malachite green. The potter's wheel, the fiery dragon, flaming torches and other symbolic decorations constitute appropriate settings for the vases, tilings, and pieces of ornamental faïence which have given to this pottery more than a national reputation. The clays used at these works are from neighboring deposits in the Ohio Valley, and in the collective exhibits made by the association this locality furnishes many of the most beautiful articles. Establishments from New England, New Jersey, New York, Maryland, Illinois, Pennsylvania, Virginia, Colorado, and elsewhere, indicate the broad membership of the association. Among other costly and beautiful specimens may be mentioned the Lord Calvert vase, Louis XIV clock cases, Pompadour dinner sets, Pompeiian vases, pieces of majolica ware, toilet sets and jardiniéres of Italian, Egyptian, Grecian, Japanese, and Persian designs. In one corner of this section are all the substances used in the manufacture of the several wares, including blocks of fire and ball clay, washed kaolin, fine silica, ground feldspar in bottles, squares of fired clay and feldspar, feldspar in the rough, and all other crude and partially prepared materials.

MOSAIC WORK

GUNNER

A Philadelphia firm claims to possess the art of restoring and redecorating anything in the line of china, bisque, glassware, and statuary, and in support of its assertion has photographs of various mutilated wares, and beside them the articles restored to their pristine form. Near by are tasteful displays of mosaics, colored tilings, terra cotta vases and architectural pieces, the structural design erected by several hydraulic brick companies, and the heroic figures cast by the American Bronze company. Such well known bronze statues as that of Lincoln, the state soldiers and sailors monument at Indianapolis, and the Columbus statue on the Lake front at Chicago, were cast by

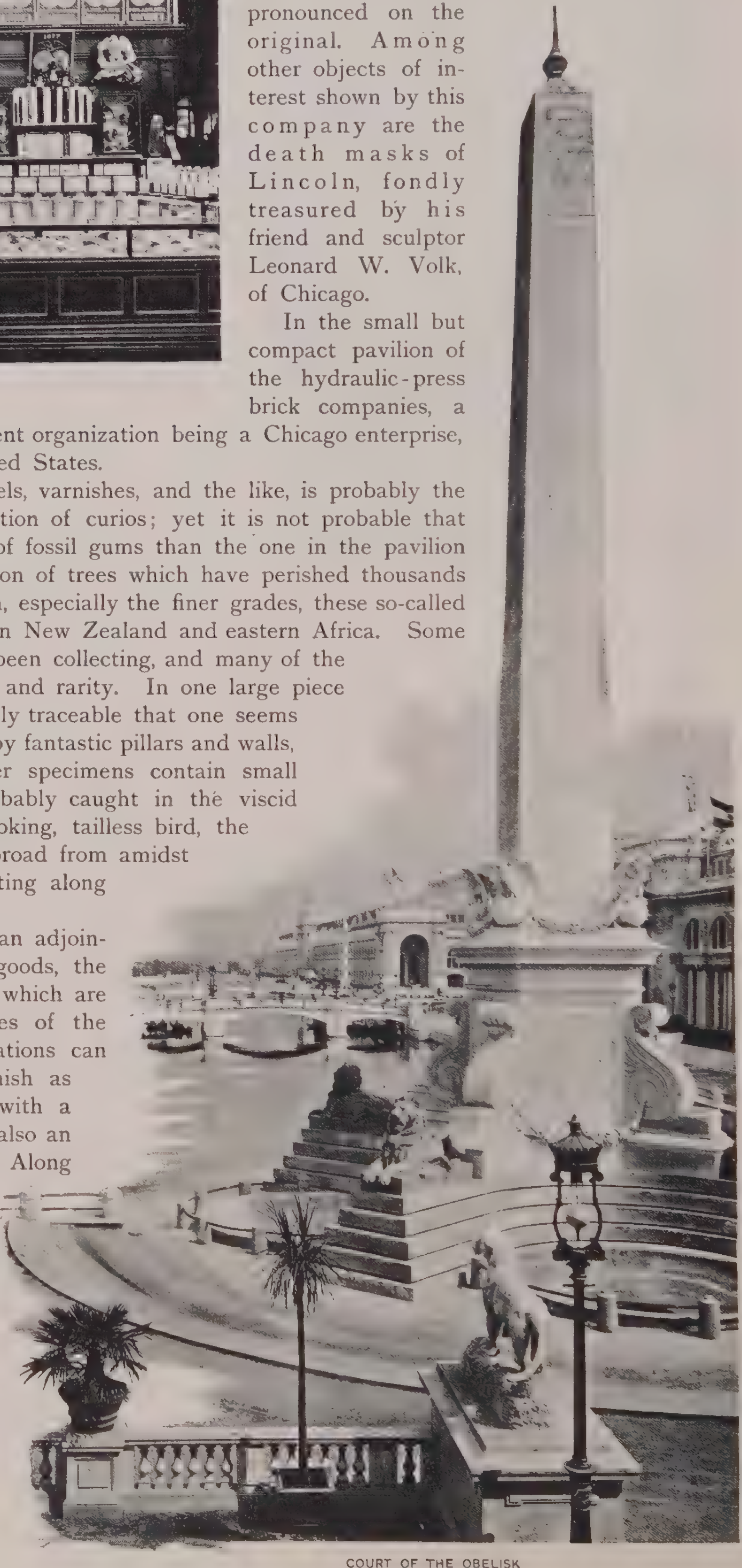
VARNISHES

this company, as also was the silver figure of justice for the state of Montana. A facsimile of the Chicago statue by Howard Kretschmar stands at this point, where many stop to judge for themselves as to the justness of the criticism pronounced on the original. Among other objects of interest shown by this company are the death masks of Lincoln, fondly treasured by his friend and sculptor Leonard W. Volk, of Chicago.

In the small but compact pavilion of the hydraulic-press brick companies, a dozen manufacturers are represented, the parent organization being a Chicago enterprise, with numerous branches throughout the United States.

In the midst of paints, gildings, enamels, varnishes, and the like, is probably the last place where one would look for a collection of curios; yet it is not probable that anywhere can be found a better assortment of fossil gums than the one in the pavilion of a Chicago varnish company. The exudation of trees which have perished thousands of years ago is the basis of nearly all varnish, especially the finer grades, these so-called fossil gums being dug from the earth mainly in New Zealand and eastern Africa. Some twenty-five years this museum of copal has been collecting, and many of the specimens are valuable for their size, beauty, and rarity. In one large piece especially, the interior construction is so plainly traceable that one seems to be gazing into an amber cave, supported by fantastic pillars and walls, and disappearing far in the distance. Other specimens contain small globules of water, or preserved insects probably caught in the viscid substance ages ago. There is also an odd-looking, tailless bird, the kiwi, mounted on a pedestal, and looking abroad from amidst the masses of copal, as though he were flitting along his native shores in New Zealand.

Varnishes and paints are displayed in an adjoining pavilion. To show the purity of their goods, the manufacturers have a series of slabs upon which are painted in colors the seals of several states of the republic. The most delicate tints or decorations can be distinguished through the coats of varnish as clearly as though the surface were covered with a film of the finest glass. A Detroit firm has also an excellent exhibit in this line of manufactures. Along the front of their pavilion is arranged a museum of copals and other gums from Zanzibar, New Zealand, and Batavia, in the natural state, and ground or bleached. Two curious carvings represent the tattooed features of Maoris, fashioned in copal by a Maori artist. At one side of the entrance is a tower, whose base is formed of gums, as taken from the earth, and its superstructure of the finished products of the factory. There are also various designs in cherry, birch, ash, mahogany, maple, butternut, and walnut, treated with the hard oil finish of which the company makes a specialty.



COURT OF THE OBELISK

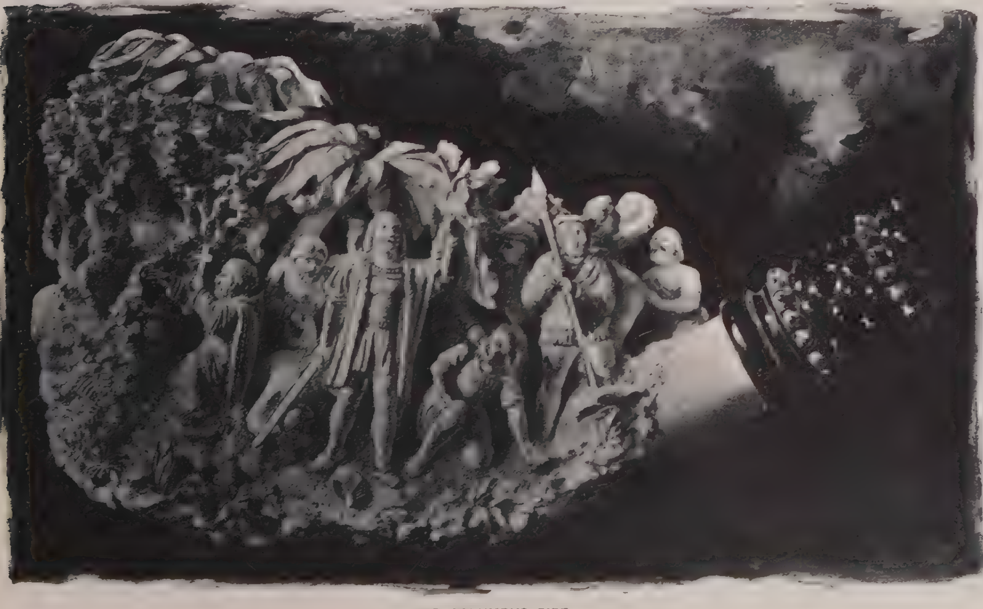
SMOKER'S ARTICLES

FURS

It is impossible here to enumerate the countless varieties displayed even by leading houses in this class of manufactures. They include all the grades ranging from heavy paints and varnishes for structural decoration to paints so delicate that they may be laid upon plush without destroying the nap, or on silk and satin without detracting from their lustre.

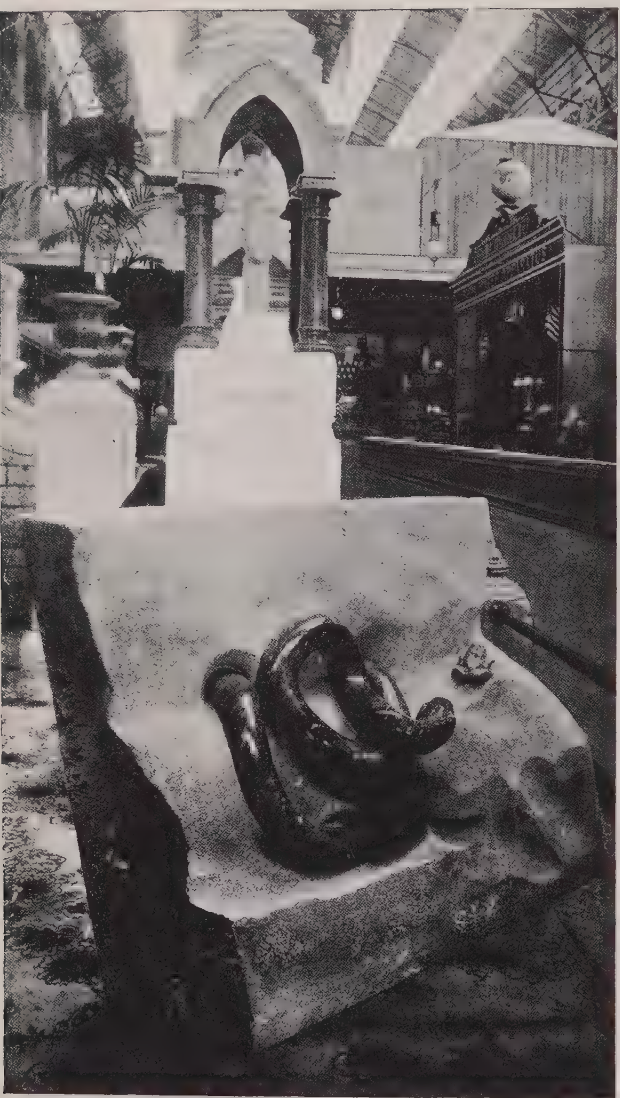
Adjacent to this section is the display of American furs, whose site will not be readily mistaken, for here among polar and black bears, among crouching panthers and leopards, richly robed female figures pose as dummies within the pavilions, or in the flesh move with admiring gaze from one exhibit to another.

A Chicago firm presents among other articles a robe made of 62,000 pieces of golden otter and seal skin, which represents the labor of one man and three girls for an entire year. It is valued at $5,000. The dummies in this pavilion are clad in the furs of the beaver, fox, ermine, sable, mink, otter, and seal, one of the mink cloaks being priced at $2,500, and one of seal and otter at $2,000. Other firms have adopted the museum method of display, but in minor degree as compared with a New York collection. From the roof of a San Francisco pavilion, for instance, is suspended a canoe in which sits the figure of an Indian seal-catcher, with a polar bear on either side, and a grizzly bear beneath. In a New York pavilion a polar bear carries the flag and holds the post of honor, with a leopard and other animals grouped around him. By an Albany firm a special exhibit is made of the process of dressing and dyeing seal skins, with the several stages practically illustrated, from the rough and salted skin to the finished article.



THE COLUMBUS PIPE

The northwest corner of the Manufactures building is largely devoted to exhibits of an architectural character, including granite shafts, monuments, globes, staircases, massive iron gates and fences, and soda water fountains, some of which form structures of themselves. The most massive exhibits are by Massachusetts



SCULPTURED SERPENT IN GRANITE BLOCK

FOOD EXHIBIT

and Vermont companies. An elaborate iron gateway forms the background to the display of ornamental metal work made by a Chicago firm, and at its foot is a richly wrought metallic fireplace of metal, decorated with figures in imitation of ancient hammered work.

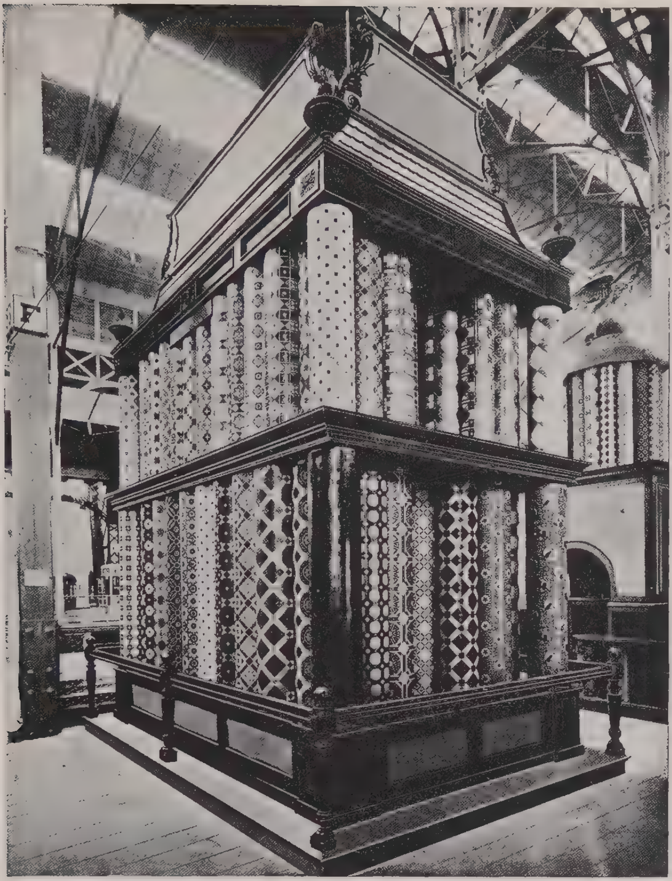
A consolidation was affected of all the firms by which were operated for many years the numerous stone quarries in the neighborhood of a little Vermont town. At Millstone hill alone more than seventy acres of granite have been uncovered, the quarrying of which gives employment to a thousand men. One of its quarries, eight acres in extent, is said to be the largest in the world from which is extracted granite suitable for monuments, the blocks being transported by rail, and taken in hand by 1500 masons, with the aid of lathes, column cutters, and polishing machines. If all the Vermont plants engaged in the finishing of this material were combined on a single site, they would occupy a space nearly twice as large as the entire area of the Manufactures building.

Before taking leave of these groups, mention may be made of several exhibits of passing interest. A Chicago company, for instance, has fashioned its painted pails and other hollow ware in the form of a huge American flag, the rows of plain white and red forming the stripes, while the stars and their field are represented by a mass of blue pails on which constellations are depicted. Behind this are shown various kinds of shoes for four-footed animals, and every variety of nail required to fasten them. Notable among these latter exhibits is one of an expert as to the best methods of shoeing horses, illustrating the advancement of the craft during the past half century, and showing the evil effects upon the hoof and leg of shoes improperly made or nailed. Another company shows different nails from those, little larger than a pin, used for the favorites of the turf, to the great, spike-like nail required to fasten the shoes of the draught horse. For this purpose Swedish iron has been found, by repeated experiment, to be superior to other kinds, on account of its ductility and fineness of texture.

TYPEWRITERS

RUBBER EXHIBIT

In order to complete our survey of the manufactures of the United States, we must ascend to the northeastern galleries, where is a miscellaneous array of exhibits, including such articles as typewriters, letter files, oil cloths, carpets, and upholstered goods; sewing machines and dress cutting apparatus, clothing, laces, trimmings, embroideries, and artificial



OIL CLOTH

flowers; hair goods and accessories of the toilet; articles of rubber, gutta percha and celluloid; and toys and fancy articles, the latter including toilet cases and novelties made from aluminum, white metal, and brass. Here also the manufacturers of stained glass make an excellent exhibit, though represented almost entirely by Chicago houses, the backgrounds of their pavilions containing some fine effects, suggestive of rich cathedral windows.

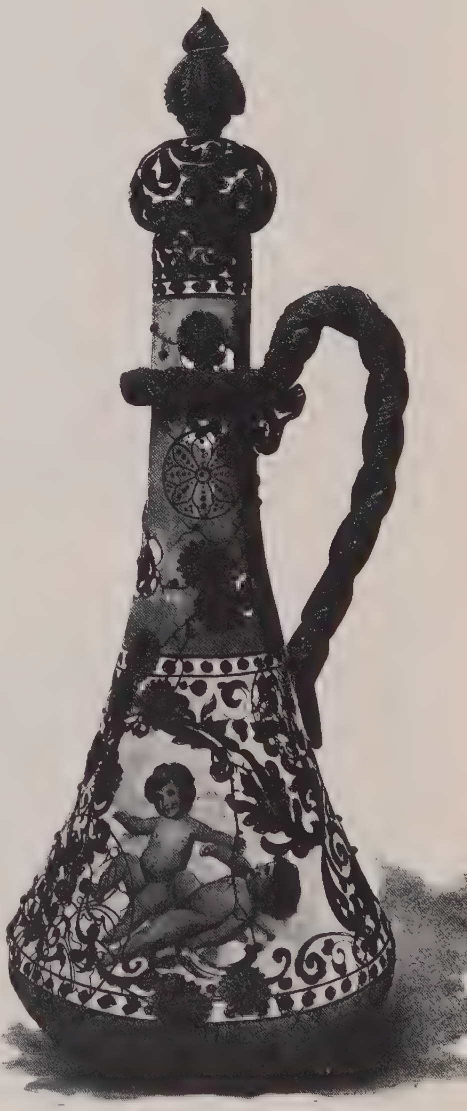
A choice display is that of the sewing machine companies, the pavilion of one of them resembling rather a marble palace than a structure devoted to business enterprise. On either side of the passage way is a large and richly furnished chamber, one for the various grades of machines, and the other for illustrating the many kinds of work which these machines will accomplish by an expert operator. A broad stairway leads to the floor above, where are several apartments decorated with their choicest needle work, the walls adorned with tapestries and silk embroideries, some in frames and others hanging from the frieze. On one side of the reception hall is the dining room, upon the table of which is a massive silver service, its pieces resting on samples of linen work. Of a chamber on the opposite side, the decorations are of a more delicate character; but perhaps the most interesting feature in the collection is that it represents only two years of organized and well directed labor aided by labor saving machinery, while in the Manufactures hall are single specimens of hand-made goods on which have been expended months and years of toil.

Of type-writers, stationery, and miscellaneous articles, from ideal fountain pens to ideal corsets and gloves, the display is infinite, and by no means unattractive. In the pagoda of a Cincinnati company is an elaborate collection of playing cards. A Boston firm has a pyramid of ice and roller skates; a Philadelphia firm, a globe and pillars of curled hair, dyed in the brightest of hues; and a New York insurance company represents in a gilded pyramid and globe the amount of its assets in gold. All these and countless other exhibits are contained in the northeastern galleries.

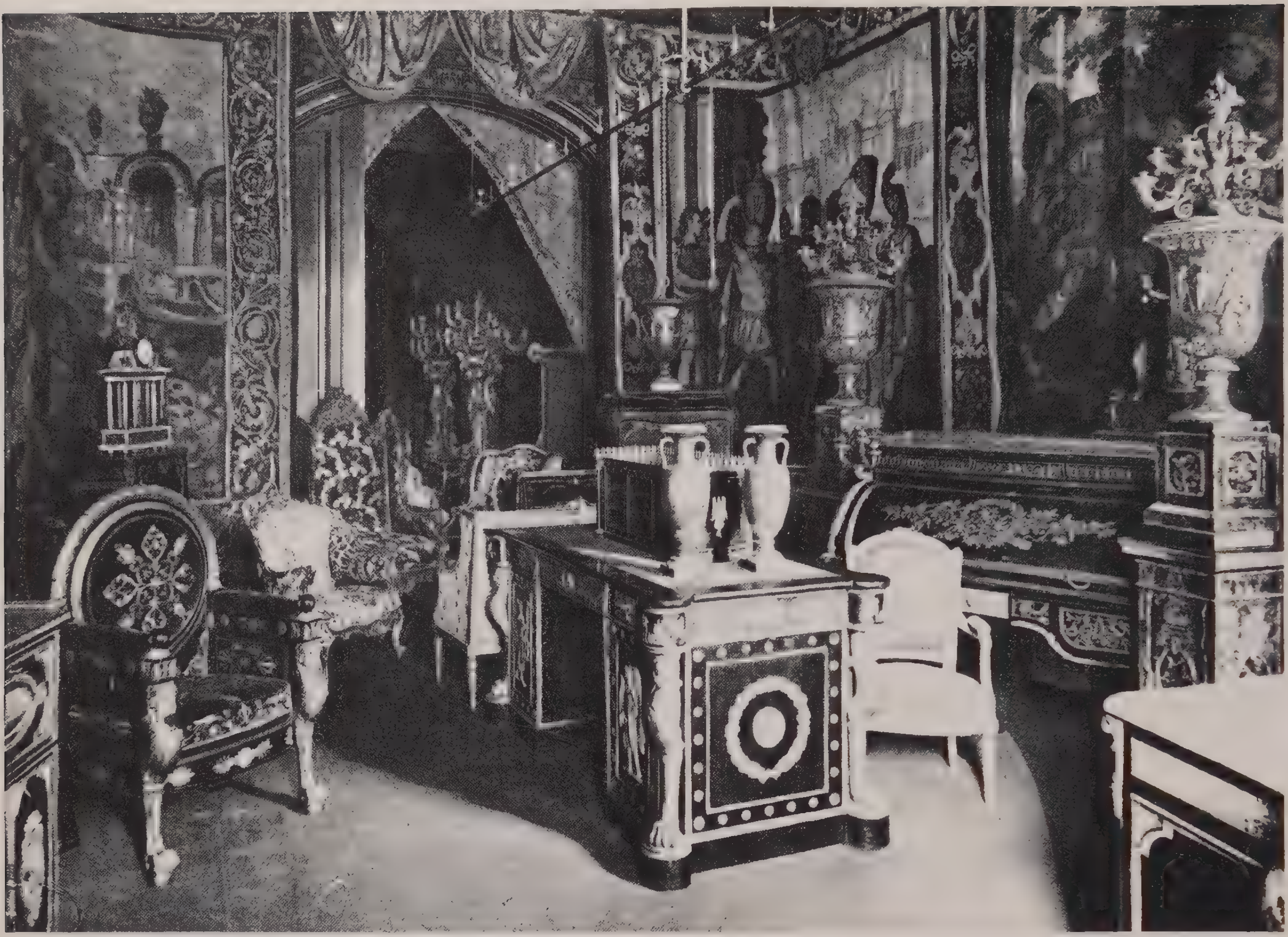
In this connection may be mentioned the exhibit of the Illinois Iron and Bolt company, consisting of copying presses and stands, the former inlaid with pearl, and of most finished workmanship.

Elsewhere on the gallery floor are exhibits of curtain fixtures, oil cloths, antique furniture, ceramics and needle work, representing the conveniences and luxuries of life in such attractive form that it is difficult to draw a dividing line between them. They form together an elaborate display and cannot here be described in detail. A Newark company has constructed its entire pavilion from the different grades of spring shade rollers which it manufactures at its several works. Philadelphia firms reveal the artistic possibilities of oil cloths and linoleums, and prove that the Quaker city has a claim to recognition as one of the leading centres in this department. In this group are also included mineral fabrics of wire, glass, and asbestos.

Toward the southern end of the gallery is the pavilion of a New York firm, of somewhat remarkable appearance, but so constructed as to be in harmony with its contents. On either side of the main entrance are



CROWN MILANO WARE



COLLECTION OF ARTISTIC FURNITURE

worm-eaten panels, taken from the choir stalls of Italian churches, nearly three centuries old, and at the further end is a clock of massive proportions with choice specimens of English wood-carving, once the property of the earl of Pembroke. The exterior of the pavilion is in keeping with the special lines which it exhibits, including antique furniture and Gobelin tapestries, with a chamber furnished in rich but simple style, and with a varied assortment of cabinets, desks, candelabra, harpsichords, and tapestries. Among them is a gilded and decorated harpsichord of Louis XV pattern; an antique cabinet of the same period, an empire desk with side candelabra, and other curiosities, some of them rare specimens of carving, gilding, and inlaying. Of the fabrics, the rarest is the Diana tapestry, woven in Brussels at the workshop of Antoine Goubels, from a design by Du Breuil, and fashioned during the early portion of the seventeenth century for Cardinal Berberini.

Adjoining the manufactures exhibits in the northeastern galleries, are several sections which, though classed under liberal arts, are for the most part so distinctly commercial in character, that they may be briefly described at this point. In a division designated commerce, trade, and banking, for instance, are check punchers and money changers, methods of automatic store service, and the exhibit already noticed of the New York insurance company, while a Boston firm illustrates the modern systems of wires, cables, and pneumatic devices by which cash and packages are conveyed in large mercantile establishments. Beyond these are patent devices for sashes, blinds, doors, staircases, roofs, and street curbs, brought within the domain of liberal arts by being classified under such heads as construction of roads, constructive architecture, and plans and models of public buildings and dwelling houses. Of this nature also are the displays of manufacturing druggists and pharmacists, of medicines, mineral waters, and foods for infants and invalids.

SEWING MACHINES

ELECTRO PLATING PAVILION

Among these classes are likewise the instruments of the physician, surgeon, and dentist, with trusses and artificial limbs, casts and apparatus used in the treatment of spinal difficulties, porous plasters, artificial teeth, electric dental instruments, and such as are used in the diagnosis of diseases.

Thus in as brief space as the nature of the subject will permit, I have described the condition and somewhat of the progress and development of home manufactures as represented at the Fair. In truth it is a marvellous development that has been made within little more than a hundred years, for the history of our manufactures begins with the history of the republic, and not until after the revolutionary war did they gain any permanent foothold. Material there was of excellent quality, and in boundless supply. Plains and valleys were well adapted to the raw staples needed for textile fabrics; forests were filled with valuable woods; the mountain sides with marbles, slates, and building stones; of coal and iron the supply was unlimited, and water-power was well distributed throughout the Atlantic slope. Yet, as in all new countries, progress in this direction was slow, and notwithstanding all the advantages, at the close of the eighteenth century the new republic had barely outgrown the restrictive policy of the mother country, and for many years later ranked only in the second class among manufacturing nations.

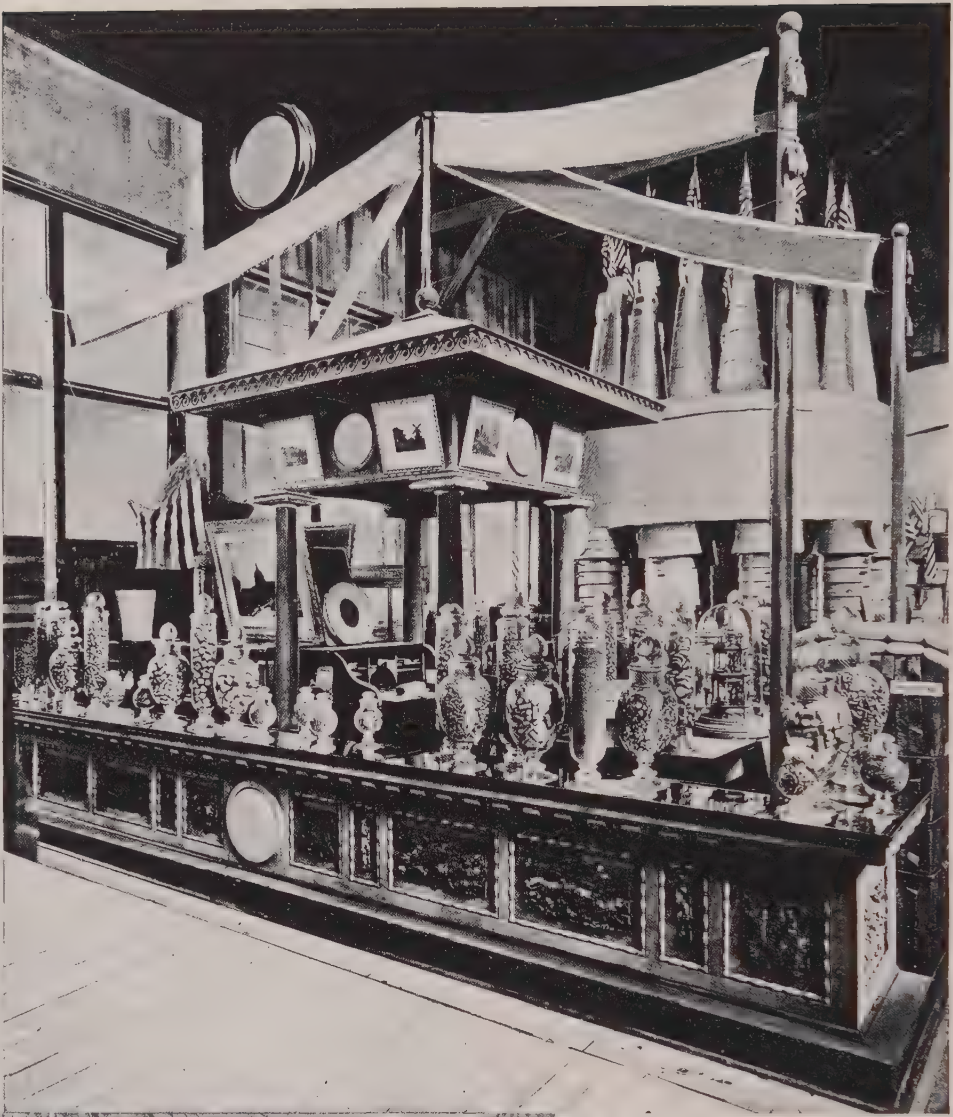
While for the first half of the present century there are no very reliable data, it is probable that in 1810 the total value of United States manufactures did not exceed $50,000,000. Thenceforth, though with some fluctuations, remarkable progress was made, especially as to cotton fabrics, to which the war of 1812 gave additional impetus, so that by 1825 New England alone had nearly 400 factories at work.

INKS AND PENS

DOOR SCREENS

For 1850, when first we have access to official sources of information, the total value of all manufactures was stated at a little over $1,000,000,000, this amount being almost doubled in 1860, and more than quadrupled in 1870. For the decade ending with 1880 the gain was in smaller proportion, with an increase of only twenty-five per cent in output and with no considerable increase in the number of establishments. Under the cumulative growth of power appliances, the volume of production has been largely augmented within recent years, and with a corresponding addition to the number of operatives. For 1892 our manufactures may be approximately stated at $7,500,000,000, giving employment directly to 3,500,000 persons, and supporting indirectly at least four times that number, or more than one-fifth of the entire population of the republic.

To improvements in machinery and methods, more than to increase of population or legislative enactments, is due such phenomenal growth; and in this direction the republic has played well her part. Just as in England the cotton-gin and carpet-loom revolutionized those branches of handicraft, so have American inventions been adopted,



however unwillingly, by European manufacturers, especially in the use of appliances for interchangeable parts. Meantime, with our almost perfect mechanisms, we are constantly increasing the quantity and improving the quality of our products, while gaining for those products a world-wide repute. Thus it is, for instance, that with a thorough subdivision of labor, fire-arms of intricate pattern can be produced at the rate of 200 a year for each of the workmen employed. So also the prices of clocks and watches have been reduced to a small percentage of their former cost, watches made in part by machinery being manufactured at the rate of three a week, while a Swiss maker requires more than a week to fashion a single timepiece. Of certain lines of silk goods, as ribbons and handkerchiefs, we manufacture largely for export, with the aid of compound looms; and of dress goods our swift-moving looms produce nearly twice as much as those of European design. In these and countless other instances the cost of production has been largely diminished, with a steady increase in the output of plant and factory.

As to the social aspect of these industries, all cause for anxiety in this direction has long since disappeared. Certain it is that in manufacturing cities, with their diversity of occupations, employment is more readily obtained than in those which depend mainly on agriculture, commerce, or mining, and that at wages from twice to four times larger than are paid in European countries. In New York alone at least $130,000,000 are distributed yearly, and in Philadelphia almost as much, among hundreds of thousands of operatives.

CORK EXHIBITS

In the latter city, as in New England towns, many of the operatives own the dwellings which they occupy, two or three members of a family often engaging in separate branches of labor, and earning more than sufficient for its support. Nowhere is there such poverty, and nowhere, except perhaps in New York, such overcrowding as in London, Paris, and other European centres. In a community whose mainstay is its factories and workshops, more money falls into the hands of the people, and is by them invested or distributed among the channels of trade than in a purely commercial city with ten times its volume of business. Thus the profits accruing from the industries of the community are largely retained within the community itself, and represented in permanent improvements or other substantial forms of realized wealth. No nation, it has been often remarked, ever became really great without manufactures. Assuredly we shall not ourselves be found wanting as a nation in that element of greatness, for with less than a three-fold gain in population, our manufactures have increased from seven to eight fold within forty years, and with improved methods and machinery constantly adding to their volume, who shall forecast the story which another two-score of years will tell?

SEARCH LIGHT ON MANUFACTURES BUILDING

World's Fair Miscellany.—In dealing with the varied and conflicting interests represented in the Exposition, it was almost inevitable that the management should become involved in entanglements. No point at issue created more complications with foreign commissioners than their right to sell duplicates of their exhibits, and no incident threatened more serious consequences than the forcible invasion of the Russian section of the Manufactures building by custom house officers, in civilian garb, and the seizure of one of its exhibits, together with its custodian, on the charge that goods were being sold in bond. The Russian commissioners, protesting angrily against this summary method of dealing with the matter, covered up their exhibits and threatened to withdraw entirely from the Exposition unless a satisfactory apology was forthcoming. Thereupon Director-general Davis, though the offending parties were the government and not the Fair officials, admitted the discourtesy, and the head of the customs service at Jackson park ordered his men in future to refrain from examining the goods of foreign commissioners, except in their presence. Thus the disaffection ended, though for a time threatening to spread to the officials of other foreign countries. This was not the first incident of the kind; for a few weeks before, a commissioner from Paraguay had suffered arrest at the hands of a Columbian guard. Finally the director-general issued a manifesto, doubtless preventing more serious consequences, forbidding the arrest or interference with foreign commissioners.

In justice to government and Fair officials, it should be stated that many foreign countries sent to the Exposition large quantities of goods which were entered as exhibits but were intended for sale. Thus, for a time, was avoided the payment of customs duties; but several complications arose from the attempt to dispose of such merchandise, for under regulations prescribed by the secretary of the treasury, this could only be done by having the goods cancelled as exhibits, transferred to the government warehouse on the grounds, and there appraised and the duty paid. Duplicates of samples could thus be placed in bond, sold at any time, and delivered at the close of the Fair. During the month of May the only exhibit in the Russian section of the Manufactures building was a placard with the following inscription. "Russian exhibit delayed by the ice in the Baltic sea." So also was deferred the installation of the Norwegian and Danish collections; but Russia was particularly unfortunate in this regard. By January, 1893, her pavilion had been completed in St. Petersburg and accepted by the government, after which it was taken to pieces, and with most of the exhibits and some twenty Russian carpenters placed on board three steamers bound for the United States. For an entire month they were frozen in near Labava, amid the ice of the Baltic sea, and two of them seriously injured. It was not until the last of March that they reached Copenhagen, and not until May that the carpenters, afterward largely re-inforced, began work to erect their pavilion. Then, attired in red blouses, black vests, leather belts, heavy brogans, and caps with patent leather visors, they set to work with a will, though supplied only with what seemed the most old-fashioned of implements, the saws, for example, being kept taut by twisting a hempen rope between crude wooden frames. Nevertheless the pavilion rose apace, and was dedicated on the 29th of May, the coronation day of the tsar, though not formally opened until some three weeks later.

GENERAL VIEW FROM GALLERY

Austria's exhibit was the first to be completely installed in the Manufactures building, and was thrown open to the public on the 3d of May.

The royal porcelain factory of Copenhagen, whose exhibits are mentioned in the text, was founded in 1779 by Christian VII, and until 1867 was managed in the king's name. During this period splendid sets of porcelain were fashioned at its kilns, of which the palaces of Copenhagen, especially Rosenberg castle, contain some valuable samples.

In the British section are some interesting specimens of knit goods made by hand, among them hosiery such as is worn by the Scottish clans. Near by are woolen shawls made in Shetland, one of them a two-ply fabric and a remarkable piece of workmanship.

In connection with the exhibit of Jamaica, the most important of the British possessions in the West Indies, it may be stated that this island has about 3,000,000 acres of land available for cultivation. Of this area nearly two-thirds are in the possession of individuals or trusts. No less than 660,000 persons, most of whom would, in other countries and under other circumstances be included in the laboring classes, own the small tracts which supply them with the means of a livelihood. The main reasons for this condition of affairs are the facilities for acquiring land, cheapness of living, and low rate of wages, with attendant scarcity of labor. Jamaica's pretensions as a health resort are here represented, for it is claimed that the island is well adapted to the cure of bronchitis, catarrh, consumption, Bright's disease, rheumatism, dyspepsia, and nervous prostration.

Several of the higher class of Chinese merchants are represented at Manufactures hall, among them Chun Quan Kee, a wealthy and travelled Chinaman, who makes the largest exhibit of merchandise and whose headquarters are in Canton.

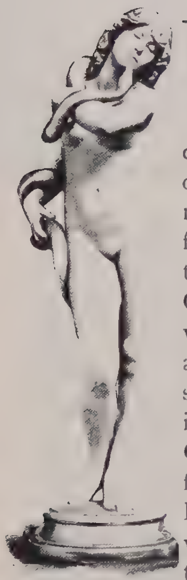
Although Corea presents the smallest exhibit of any foreign nation, there are few which attract more attention. It is the only one ever prepared by that country for such purposes, and the importance which the so-called hermit kingdom attached to it appears from the fact that she appointed as her royal commissioner an official whose rank corresponds with that of an assistant secretary of state.

Probably no exhibit in all the Exposition was installed at such expense of money, time, and labor as the great gun which stands in the Krupp building. The massive hoisting apparatus whereby it was lifted from the steamer which carried it to Baltimore was specially manufactured for the purpose in the Krupp works at Essen. The car which brought it to Chicago was composed of two iron trucks, weighing 64,000 pounds, under each of which were sixteen wheels. As the journey was made westward toward the Fair, the bridges and culverts over which the train was to pass were carefully inspected, and in some cases strengthened, for the gross weight of car and gun was 225 tons. Along the line of route, and at Jackson park, crowds were gathered to witness the progress of the monster piece of ordnance, which finally reached its destination a fortnight before the formal opening of the Exposition. In the structure of walrus hide which California exhibits in the Shoe and Leather building, as mentioned in the text, no piece is less than two inches thick. It is said that two years and a half were required for the tanning process, which was conducted at a San Francisco establishment, the walrus from which the hides were taken being killed in the Arctic ocean, in July, 1888.

PERFUMES

CHAPTER THE NINTH

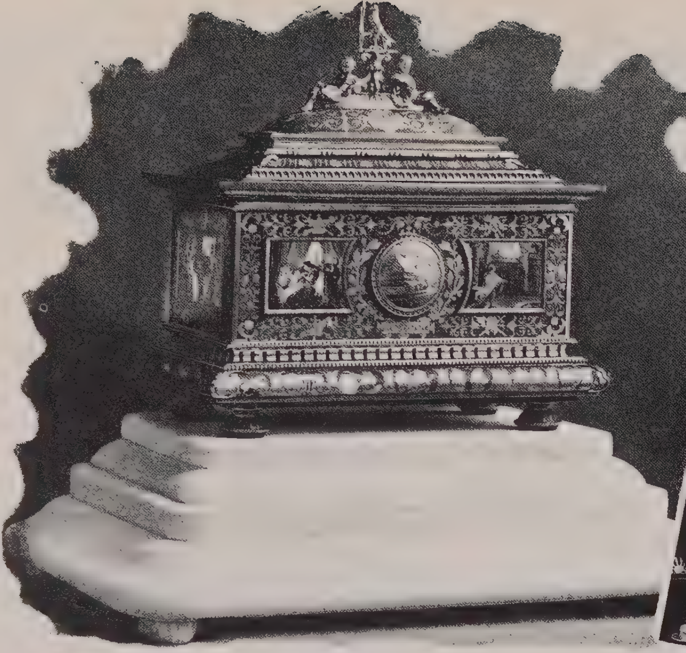
FOREIGN MANUFACTURES



FROM the manufactures of the United States let us turn to those of foreign lands, represented at the Columbian Exposition in larger volume and variety, of richer material and of more finished workmanship than at any of our great world's fairs. Among all the foreign participants the largest amount of space was allotted to Great Britain and her dependencies, 500,000 square feet in all, of which the mother country appropriated more than three-fifths, leaving but 184,000 for what Sir Charles Dilke has termed the Greater Britain of her colonies. Considering that some of these colonies voted individually almost as much money as England herself, this allotment appears somewhat out of proportion, and especially in the hall of Manufactures, where to Great Britain is assigned 100,000 square feet, apart from gallery room, and to all British colonies only 35,000. It is also worthy of note that Britain has no central pavilion, like those of France and Germany, in which to mass the best of her exhibits, though occupying one of the choicest sites in the gift of the director-general.

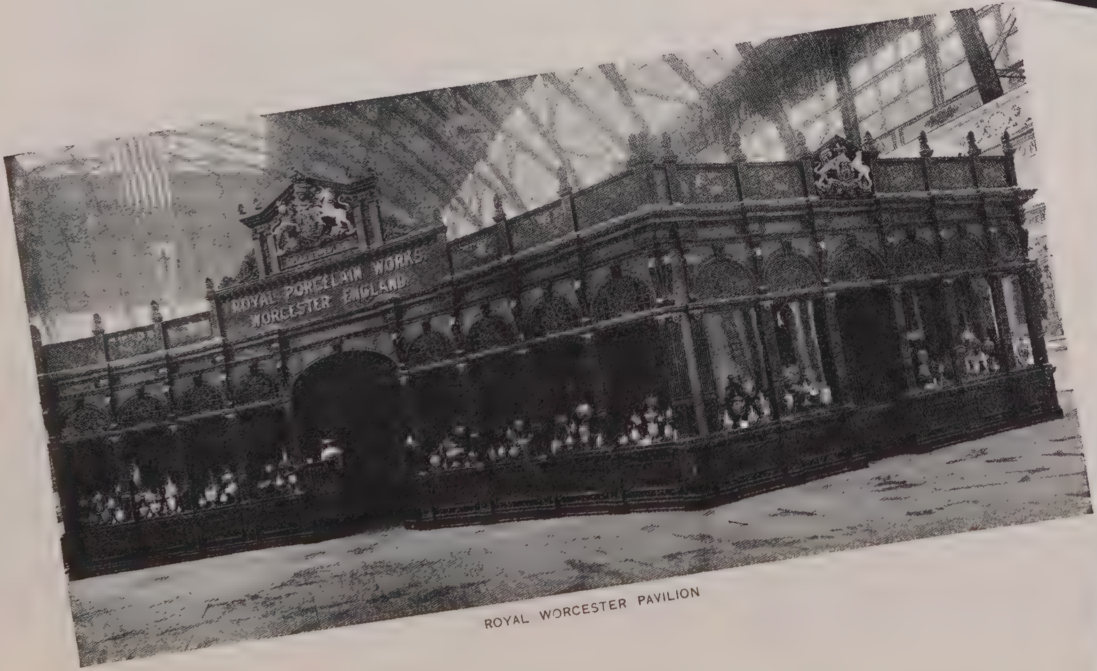
The front of the British section, facing on Columbia avenue is largely occupied by pottery, and especially by porcelains and chinaware, all grouped under the heading of ceramics and mosaics. If in certain respects the display is inferior to that of some other European nations, as to the French in delicacy and to the German in elaboration of design, it is nevertheless a creditable exhibit, one far superior to any before collected in the British isles. While the years that have elapsed since the London Exhibition of 1851 have witnessed what may be termed a renaissance in ceramic art, of late manufacturers have devoted themselves rather to improving the quality of their wares than to the production of new designs or methods of manipulative treatment. Still is noticed the influence of Japanese art, with motifs borrowed from the French, and from the choicer product of Sèvres and Dresden; but in the specimens pre-

DOULTON POTTERY



SHAKESPERIAN CASKET

PORCELAIN

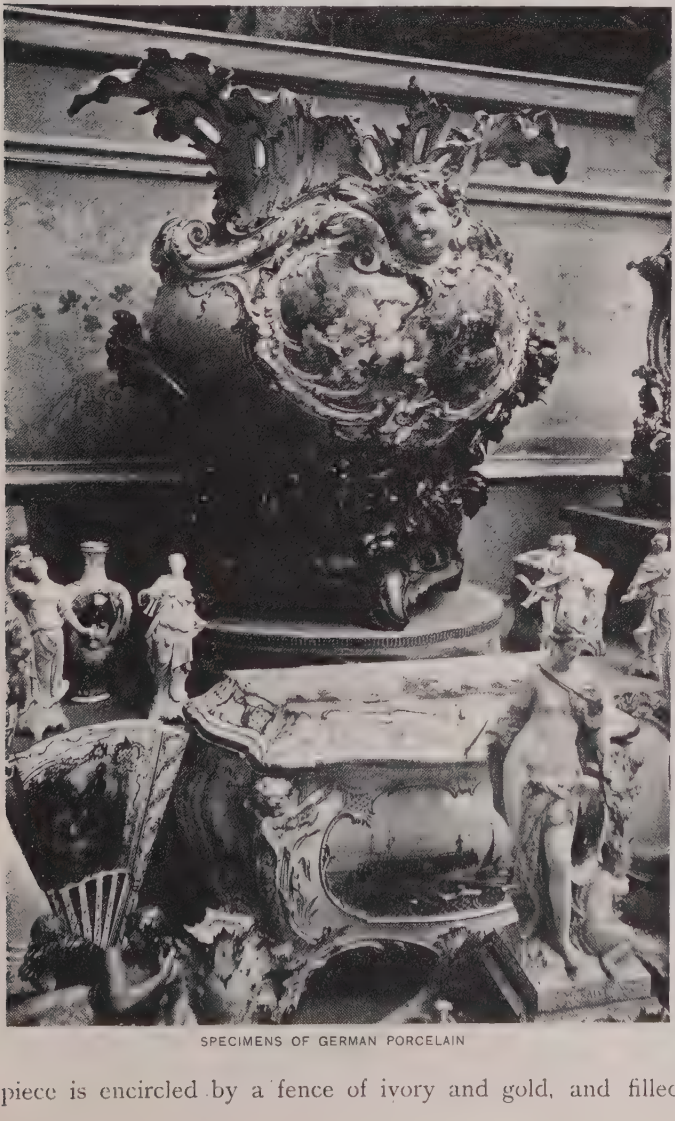


ROYAL WORCESTER PAVILION

ROYAL WORCESTER WARE

sented at the Fair we have no mere striving after effect; rather a chaste and subdued embellishment, with variety of detail and excellent workmanship.

A prominent place in the British section is given to the exhibits of Doulton and company of Lambeth and Burslem, contained in a double pavilion connected by a dome-covered hall, with decorated panels displaying ceramic processes from the digging of clay to the ornamentation of a vase. Among them is a ewer, six feet high, of slender proportions and novel design, probably the largest ever fashioned of stoneware. On another more than four feet high are groups around its widest part representing epochs and incidents of English history, beginning with the Druids offering human sacrifices in the dark and ending with the reign of Queen Victoria. Around the neck are single figures of English kings and queens, from Caractacus to George I. On a ware vase are depicted scenes from rustic and animal life, and on other pieces are paintings of birds, scroll work and models in bas-relief. On one of the Faïence vases are depicted some of the heroines of antiquity, as Dido, Cleopatra, Medea, Ariadne, and Lucretia. On a pair of vases more than five feet high are portrayed the legends of Perseus and Andromeda and Theseus, and Ariadne, the daughter of Minos, as she gazes seaward from the shore of Naxos, "watching, weary, and forsaken," calling to mind one of the most descriptive lines of Ovid:

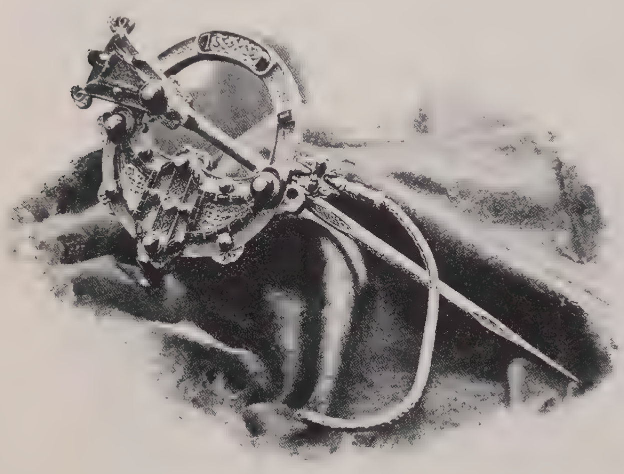


SPECIMENS OF GERMAN PORCELAIN

> Reddabant nomen concava saxa tuum.

On a tall, slender ewer are figures typical of art and music, with heads symbolical of epic and lyric poetry. Chief among the exhibits from the Burslem works of this firm are the Columbus and Diana vases, the Dante and Chicago vases, with numerous articles for use and ornament. Of other of the Doulton exhibits, in the gallery of the Manufactures building; and in the grounds of the British building mention will be made elsewhere. Second to the Doulton display, and second only, is that of the Worcester Royal Porcelain company, containing a large variety of specimens, and in value varying from one to many thousands of dollars. Among them are some beautiful vases tinted in ivory and ornamented with gold filigree of cunning workmanship. In their list of specialties are porcelains in many colors and patterns, including chaste and elegant designs in encrusted gold and Pompeiian green, with figures and statuettes in stained ivory, jardinières and flower-pots, lamps and candelabra. But the most attractive feature is their dinner and banquet sets, the pieces ornamented with coral rose and gold, with lace-like edges and figures painted in delicate hues. On a so-called rustic table the centrepiece is encircled by a fence of ivory and gold, and filled in with figures suggestive of rustic life.

A specialty of the Coalport China company's exhibits is its reproduction in chalcedony of the hues of agate, as may be seen in two of its vases intended for Princess Christiana. In those of another company is a remarkable illustration of what can be accomplished in the way of decorative art on porcelain and china-ware. Among them is a Shakesperian centerpiece of more than a hundred parts, its base in Rouen green, with tints of ivory and gold, with figures emblematic of poetry, history, tragedy, and comedy, supporting a vase on which are depicted the heroines of Shakespere. By one firm is displayed a fine collection of Copeland, Minton, and Wedgwood wares, among them specimens of the pâte-sur-pâte process, of Chinese origin, and producing the effect of cameo work, the decorative scheme being applied in thin layers of liquid clay before the vase is burned. Here also is a reproduction of the jubilee vase presented to Queen Victoria in 1887. By other firms are exhibits of artistic pottery, jet goods, tiles, and mosaics.

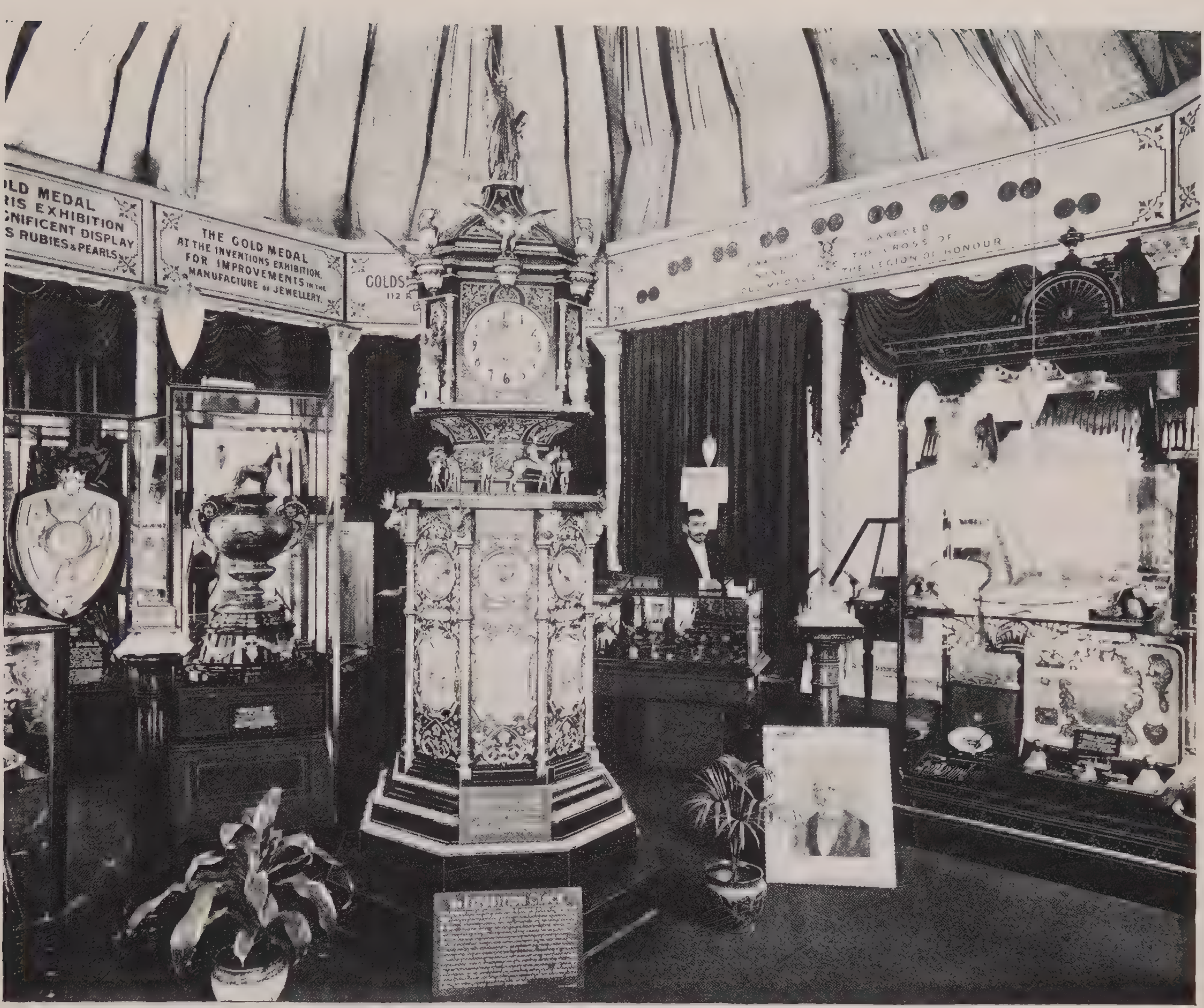

ANTIQUE IRISH BROOCH

Prominent among the exhibits of gold and silverware and jewelry are those of the Goldsmiths' and Silversmiths' company of London, in the line of gem ornaments, plate of all descriptions, cutlery, chronometers, clocks, and other articles, including some of the best and most recent specimens of English workmanship. A feature in their display is a Shakesperian casket, intended to illustrate the art of damaskening in connection with goldsmiths' work. The lid is fashioned in the form of moldings damaskened iron and gold, with figures typical of dramatic and literary art, surmounted by the crest of Shakespere. On the body of the casket, contained within moldings in gold, are enameled paintings representing some of his most famous scenes, with a medallion bust of their author, and a picture of his birthplace in gold repoussé. By Mappin brothers is also a display of silver and electro plate, and by another exhibitor one of historic articles, including old English, Scotch, and Irish silver plate. In an adjoining group are reproductions of Irish art in metal work, largely in the form of crosses, croziers, and shrines, copied from the collections of the Royal Irish Academy and Trinity College, Dublin. Of these there are duplicates in the Blarney Castle Village in Midway plaisance, each one forming a link in the history or traditions of the emerald isle. Here is a fac-simile of the bell of Saint Patrick, said to have been preserved for fourteen centuries by custodians descended from the same family. There is also the famous Tara brooch, its face inlaid with ornamental designs in many varieties, resembling those of illuminated Irish manuscripts, but so minute that only through a powerful lens is revealed their delicate tracery. This, it is related, was picked up on the sea-shore by the child of a poor Irish woman, sold for a few pence to a Drogheda watchmaker, and finally purchased by the academy for the sum of $1,000. Other historic brooches there are, one named the Daïriada, the most ancient of all the collection, and another, bearing the date of 1050, unearthed by the plough of a farm laborer. Of crosses we have the cross of Cong, made in the days of Turlough O'Conor, king of Erin, and placed in the abbey of Cong by Roderick O'Conor, the last of Ireland's monarchs.

PORCELAIN

In the Furniture group, which includes upholstery and artistic decoration, the centre of interest is an exact reproduction in three-quarter scale of the banqueting hall of Hatfield house, the seat of the Marquis of Salisbury, probably the best specimen extant of the Elizabethan style of architecture. By a London exhibitor, all the oak carvings have been reproduced with remarkable fidelity of detail, portraying historic incidents long before this ancient manor became the residence of Queen Elizabeth or passed into the hands of Sir Robert Cecil. From one side of the hall, left open for the purpose, is an unobstructed view of the interior, its marble floor covered in the centre with a Persian rug, on which are plain oaken chairs and table such as the Cecils use to-day. On the further side is an old-fashioned fire-place, bearing the date of 1637, with fire-irons and dogs, or andirons, to correspond, flanked with the mailed armor which the Cecils

PORCELAIN


THE GOLD MEDAL AT THE INVENTIONS EXHIBITION FOR IMPROVEMENTS IN THE MANUFACTURE OF JEWELLERY.
LD MEDAL
RIS EXHIBITION
NIFICENT DISPLAY
S RUBIES & PEARLS
THE CROSS OF THE LEGION OF HONOUR

GOLD AND SILVER SMITHS EXHIBIT

wore in the holy war. Above all is their coat of arms, beneath which are represented in tapestry their ancestors who took part in the crusades. At one end of the hall is a minstrel gallery, with balcony of lattice work, and lions rampant grasping the shields on which are displayed the primal quarterings of the family; at the other end are large folding doors, with life-sized portraits of Elizabeth, and Mary queen of Scots.

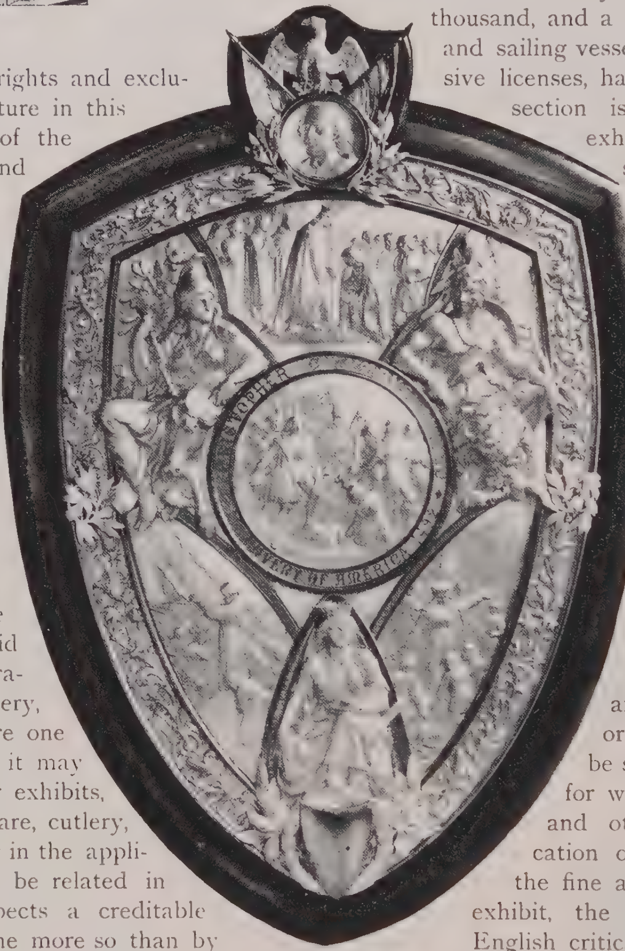
On a billiard table contained in this group he who is so disposed may expend the sum of $5,000; for such is the price of what is said to be the finest table that English makers have produced. Its frame of oak is richly carved, and on its panels are depicted sporting incidents or scenes from rural life. The pockets are of novel device and above it is a specimen of artistic metal work in the form of an electrolier, each burner fitted with a crimson silk shade. Among other exhibits in the furniture line are dining-room, drawing-room, and bedroom sets in the last of which the display is especially strong. By a Birmingham firm is exhibited a bedstead with canopy of solid brass, the central panel of the foot-rail containing a figure of liberty in full relief, and the pillars supporting vases whence issue flames symbolic of the Chicago fire. Of wall papers, carpets, curtains, stained glass, and other decorations, and especially of the first, exhibits are fully in keeping with the remainder of the group.

In textile fabrics our British cousins are liberally represented, with about one-third of all the exhibitors included in these groups, to which was allotted a liberal proportion of space. While, as in other departments of manufacture, there were some who took umbrage at the McKinley tariff, all branches are here represented, and by firms of unquestioned standing. The silks, which were inspected by the queen before being shipped to Chicago, include, among other varieties, damasks and brocades, plain and figured satins, and velvets, embroideries, trimmings, and crapes, handkerchiefs, scarves, and shawls, gold and silver tissues, flowered silks, and mixed designs in silks and metals. As to delicacy of color, workmanship, and general treatment they form a good display, comparing not unfavorably with the French collection on the opposite side of the nave. Of cotton, linen, and woolen goods, of clothing and costumes, and of the numberless fancy articles included in these groups, it is unnecessary here to make other than passing mention, for the quality of such goods is known the world over, and nowhere better than in the United States.

BILLIARD TABLE

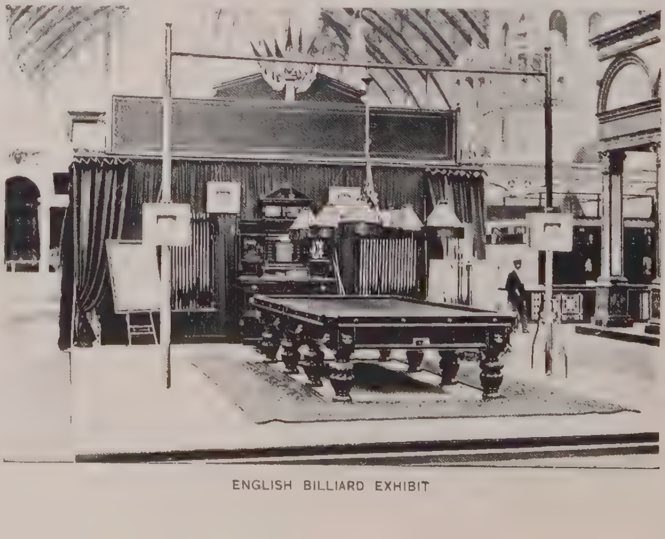
In the group of chemical and pharmaceutical products, including druggists' supplies, there is a large number of exhibitors, prominent among them being those of the United Alkali company and of Stevenson and Howell. The former is a combination of manufacturers, organized in 1890, not as a trust but for mutual protection, first to avoid the violent fluctuations which, before that date, had been of frequent occurrence, and second, by the adoption of new or improved processes to establish a superior and more economic standard of working. The company has a paid up capital of $42,000,000, and a reserve fund of $2,500,000, owns about fifty chemical, copper, metal, and salt works, several hundred miles of railway sidings, railroad wagons by the thousand, and a hundred or more of steamers and sailing vessels, employs an army of men, and with its valuable patent rights and exclusive licenses, has largely reduced the prices of many lines of goods. A feature in this section is a model of Windsor Castle erected in the booth of one of the exhibitors, a perfect fac-simile in miniature, forty feet long and some twenty inches in height, a green baize cloth doing duty for the green sward which surrounds this ancient abode of royalty.

Manufacturers of paints, colors, dyes, and varnishes are well represented, as also are those of type-writers, papers, blank books, and stationery. Of art metal work a single exhibit has a group of bronze replicas, including one of Robert Burns. In marble and stone work there are Keltic and other crosses, one of them a reproduction of the ancient cross of Kilkispeen, in the county of Kilkenny. Of glass and glassware there are two, and of stained glass in decoration, four exhibitors, in the line of domestic, civic, and ecclesiastic art. Of church furniture there are samples from an Exeter factory. Of hair work, coiffures, and accessories of the toilet, of travelling equipments of rubber and celluloid goods, of lighting apparatus, of heating and cooking apparatus, of vaults, safes, hardware, edged tools, and cutlery, and of materials of war and sporting implements there are one or more exhibitors in each of these groups. In conclusion it may be said of Britain's collection that it differs from all her former exhibits, for while at other expositions her display was mainly of hardware, cutlery, and other serviceable articles, its excellence now consists rather in the application of art to objects of common utility, and as will presently be related in the fine arts themselves.



THE COLUMBUS SILVER SHIELD

Though in some respects a creditable exhibit, the British collection has been sharply criticised, and by none more so than by English critics, on the ground that it does not properly represent the manufacturing power and achievements of Great Britain. Says her commissioner, in an article recently published in the London *Engineering*, a magazine of which he is the editor: "While a handful of exhibitors will stand high in the Manufactures and Liberal Arts building, the question naturally arises, why, in this great battle-ground of commerce, England has refused to push forward any considerable force of her manufacturing army? And why is this, which will be probably the most important, as it is certainly the largest exposition the world has seen? The answer is found partly in the fact that Englishmen have not realized the vast importance which the Columbian Exposition will have on the trade of the world in the immediate future, and probably for many years yet to come, and partly because the actual facts of the case were not brought clearly enough before the possible exhibitors, who care little for official circulars, and require conviction by personal arguments, a long and tedious process. They resent the policy

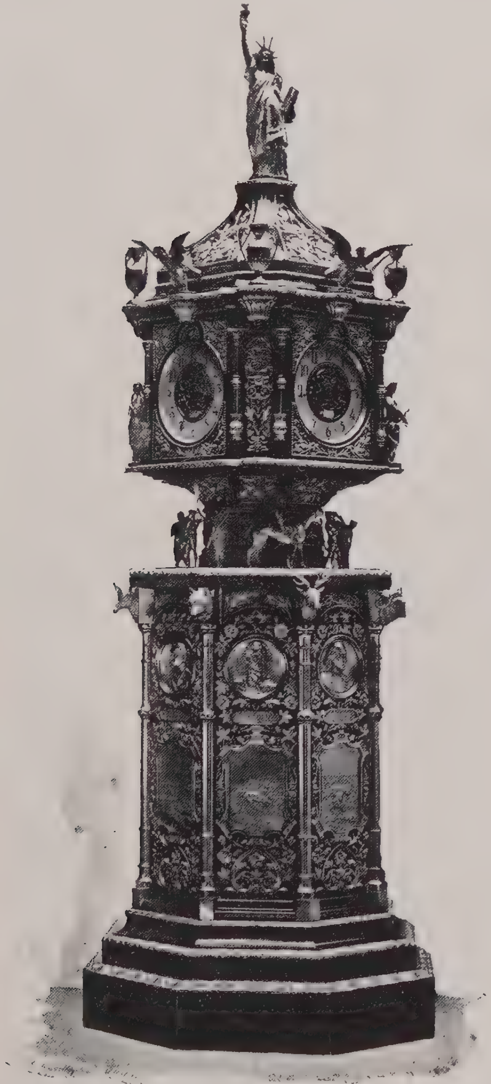


ENGLISH BILLIARD EXHIBIT

that has so largely helped to develop American industries and manufactures and to increase her wealth, ignoring the fact that in spite of tariff barriers the United States are by far our largest customers, and therefore most worthy of being studied and encouraged."

CANADIAN MANTEL

Before proceeding further with the exhibits of European nations, let us see what the dependencies of Great Britain have on display in their several sections extending to the south and westward of the British division. In the Canadian section, one of the most striking of all the exhibits is in the form of a mammoth wheel, the component parts of which are circular and hand saws. To present a detailed description of Canadian manufactures as represented at the Fair, would be to describe those of an ambitious and enterprising country, but one in which this department is subservient to her agriculture, lumber industries, and fisheries. In her 10,000 square feet of space Canada has a large variety of manufactures, but little of any one class, for here are illustrated many branches of industry. The cotton fabrics of the dominion, for instance, are almost represented by a single firm, and of other textiles the collections are insignificant, in quantity at least, as compared with those of the United States. Builders' hardware, as to their comparative importance, it may here be stated that the annual value of the agricultural exports of the dominion, is nearly $40,000,000; of lumber $24,000,000, and of the products of the sea about $10,000,000, while exports of manufactures proper are valued at less than $7,000,000, against some $42,000,000 a year of imports from Great Britain alone.



THE EXPOSITION CLOCK

Among the more interesting exhibits is a miniature representation of the industries introduced and fostered by the dominion government among the Indians of Manitoba and other provinces, through the schools established in their midst within the past few years. Side by side with printing cases, work-benches, carvings, needle-work, photographs and models of industrial schools, and specimens of drawing and penmanship, are native lodges filled with robes, net-work, woven baskets, bead-work, and illustrations of those simpler occupations of savage life from which the rising generation is departing. A large skin filled with pemican, or dried and pounded buffalo meat, is displayed as somewhat of a curiosity, by the Assiniboin Indians. Among the models is one of a native village near Bute Inlet, British Columbia, and another of the Rupert Land industrial school, the latter fashioned by an Indian boy. This school also displays a neatly printed pamphlet, the handiwork of its pupils, and from which a portion of this brief description has been derived. A few feet from the Canadian section is that of New South Wales, whose motto "Advance Australia," seems not inappropriate, when we compare her exhibits with those of other colonies. Taken at a disadvantage, when required to stand before the world as a manufacturing country, she has nevertheless a creditable display, in view of the infancy of this department of her industries. Large photographs of public buildings and scenes in and around Sydney, profusely displayed on the walls of her pavilion, suggest to the observer the important part which the metropolis plays in the material life of the colony. At one point suites of library and dining-room furniture, made of cedar, black bean, honeysuckle, and other native woods, neatly carved in designs representative of the native flora, may be instanced as superior forms of manufacture, while the furs and hides of opossums, cats, bears, goats, and

SOAP WITH WINDSOR CASTLE MODEL

kangaroos, gathered into another nook, point to a not unimportant branch of enterprise. A large stand, on which are bottles of eucalyptus oil for lubricating and, as some use it, for medicinal purposes, a pile of asphaltum blocks, a case of horse-shoes, which will compare with the best in the American section, stationery, clothing, washing machines, and other miscellaneous articles testify to the ambition of New South Wales to be classed ere long as a manufacturing country.

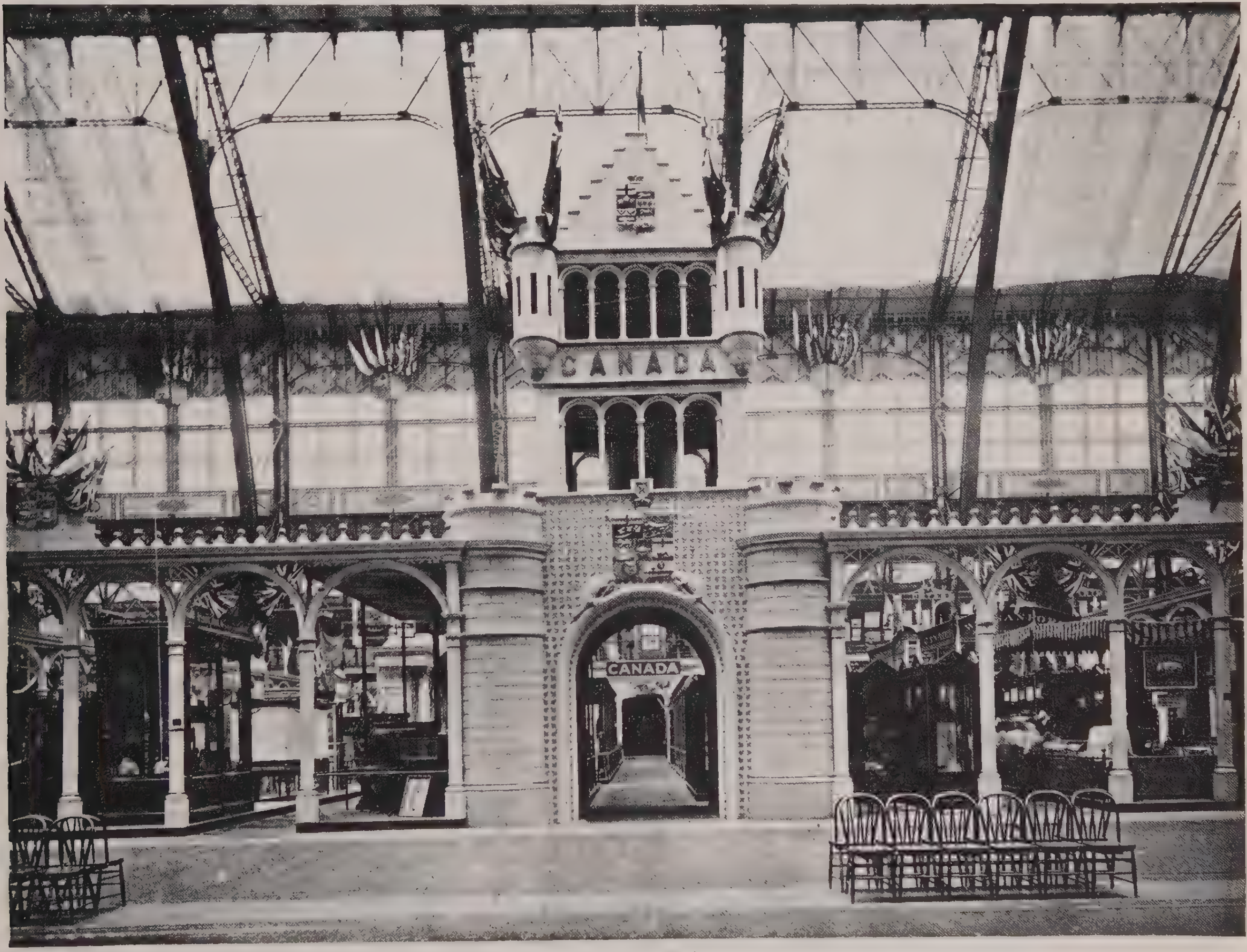
The exhibits of Hindostan are housed in a double pavilion, one part of which, constructed entirely of teakwood, is a specimen of Hindoo wood carving, as developed in the lapse of centuries. Among its contents are elaborately carved tables, desks, chairs, book-cases, mantels, and all the interior furnishings and decorations made from teak, black and sandal woods, executed by native workmen. In the other chamber is an exposition of metal-work fashioned by native artisans, including vases and ornaments in brass and copper, silver and gold, with enamelled work of cunning design. In the form of a screen to this apartment is a beautiful piece of embroidery, with interwoven silk, gold, and silver wire, on which is wrought in needle-work a copy of a poem, inscribed upon the tomb of one of Agra's queens.

SECTION OF PAVILION SHOWING BERLIN ROYAL PORCELAIN

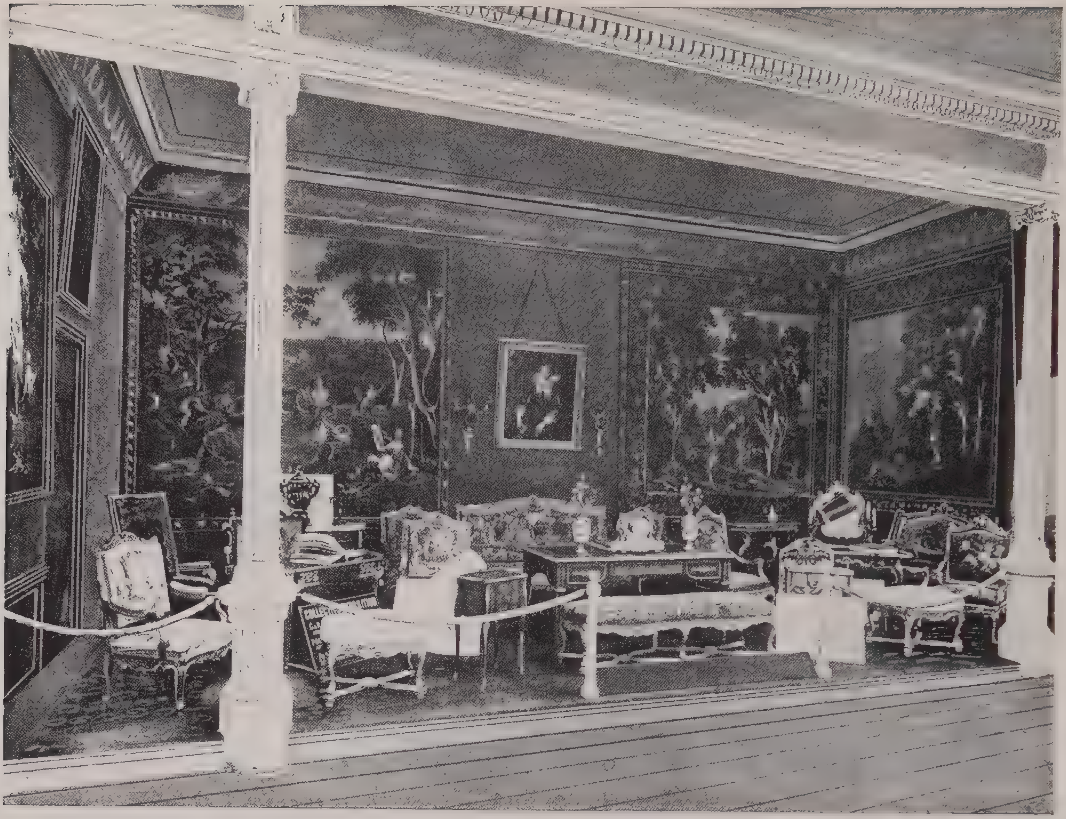
In the pavilion of Ceylon in the form of a small Cingalese temple, is a collection of articles manufactured from native cabinet woods of extreme durability. There are also specimens of woven and hammered goods, with various implements for the preparation of food. In the structure known as the Ceylon court, between the French and German government buildings, near the lake shore, is a fine reproduction of old time Cingalese architecture, of which, as also of the book in the Woman's building, where are illustrated the occupations and condition of the female population, mention will be made in other sections of this work. The Jamaica pavilion is a light and cheerful structure, filled with the natural and manufactured products of the island. Around the main entrance are views of Kingston harbor, and other scenes in this new and popular winter resort. Among the exhibits is a case filled with delicate fans, decorated with shells, ferns, and bird's wings. There are also shells carved in the form of leaves and other articles of deft workmanship, and at the foot of the case are articles manufactured at the government penitentiary, with specimens of Jamaica beans and banana flour.

In a choice collection of native woods one-half of each piece is polished, to show the beauty of its grain and its value for cabinet and ornamental purposes. One end of the pavilion is somewhat suggestive of a grocery, with small bins containing samples of starch, tapioca, vermicelli, and sugar. Jamaica coffee, berries, ginger, lemonade, pickles, and guava jelly, with salt from Turks island, within the jurisdiction of Jamaica, tend further to demonstrate the richness of this portion of the British West Indies. Specimens of old Jamaica rum are not far removed from a counter of wide-brimmed straw hats, the making of which is an important branch of industry. A neatly arranged herbarium displays the flora of the region, and a dozen large rolls of sole leather, a collection of common pottery, and a few large tortoise shells presently to be carved into articles of surpassing beauty, are suggestive of other pursuits of the native and half-breed population.

Adjacent to the British section is the French pavilion, on the opposite of Columbia avenue, a handsome and tasteful edifice, its entrance near the clock tower, and the centre of the nave in the purest of French classic style, and with facade of the French renaissance, finished in white and gold, and rich in artistic decoration. Passing under the arched ceiling and between walls with figures emblematic of science, art, literature, and philosophy, we enter a chamber where is a rich display of tapestries and porcelains, rich not in number but in quality. Among the former are masterpieces from the Gobelin national factory, established about the middle of the fifteenth century, and whose tapestries are of world-wide repute. On one of them, named La Filleulle des Fées, measuring some twenty-six by fourteen feet, and yet of most delicate tone and finished workmanship, were expended nine years of continuous work. It is valued at a million of francs. In another of almost equal dimensions, whose theme is Homer deified, four skilled workmen completed a seven years' task. There are



CANADIAN SECTION

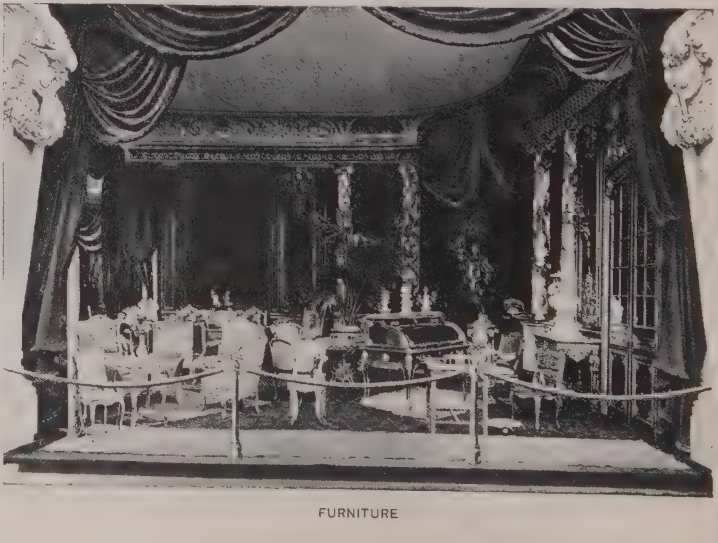


ARTISTIC FURNISHINGS FROM FRANCE

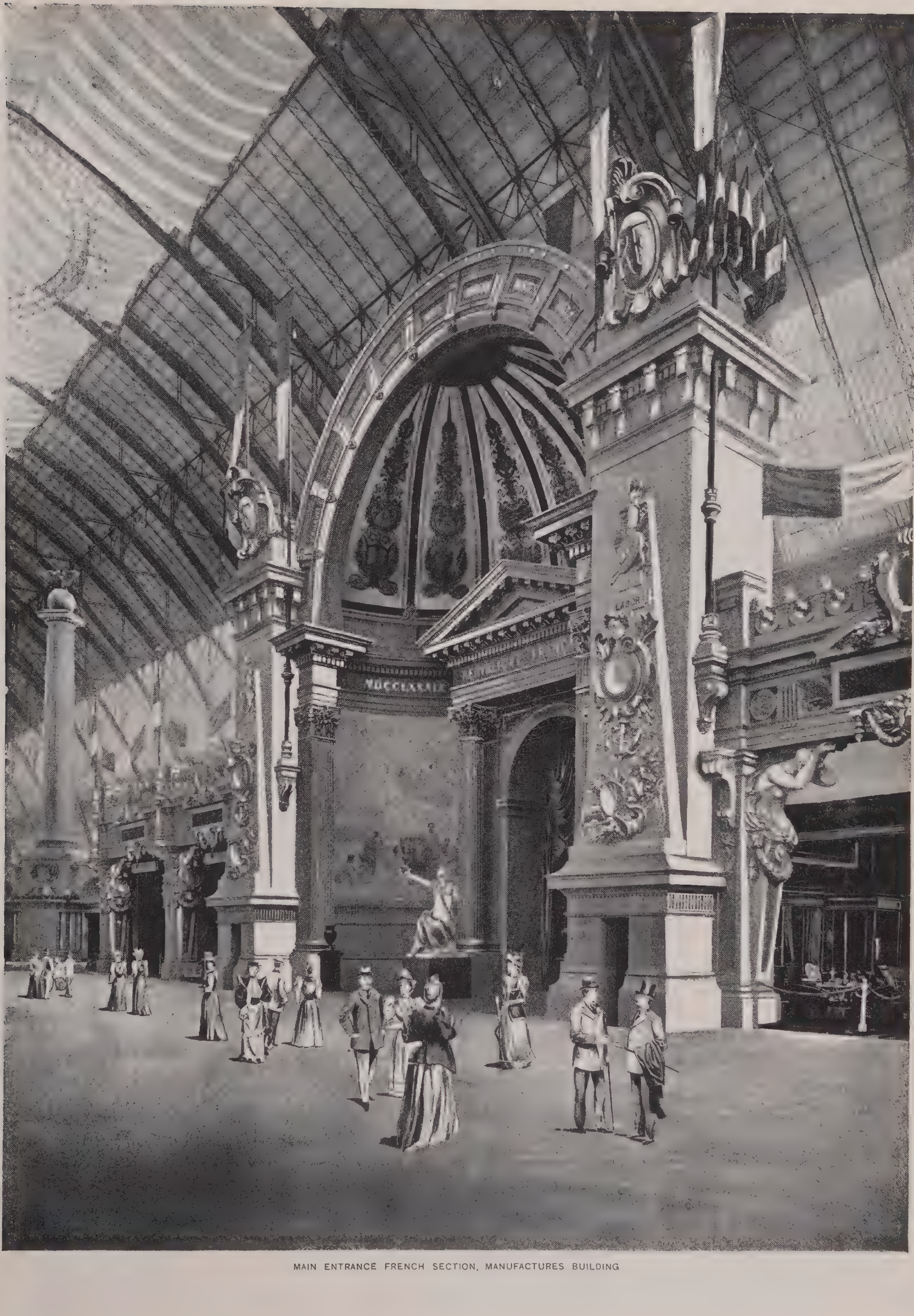
also Beauvais tapestries of surpassing beauty, and furniture upholstered with silken tapestries made at the government factories, for this is the national salon, and everything that it contains is the property of the nation. In the centre of the room is a choice collection of Sèvres pottery, some of the pieces never before exhibited. Here is an excellent illustration of what has been accomplished in this direction within the last century, and especially within the last decade, much of it due to the Sèvres factory which, subsidized as it is by the government, under government supervision, and aided by some of the foremost artificers among this nation of artists, has produced the best and most recent results in design and decorative scheme.

Among the collection of porcelains is a large Mycenæ vase by Doat, on which a tournament is depictured on a ground of vermiculated gold, and a Saigon vase by the same artist, with garlands of colored pâte, with cameos and light green ground. A Tuscan vase is ornamented with roses on white ground, and of Escallier vases there are choice specimens representing summer and autumn, and one with theatrical masks and accessories. There are Persian vases by Gely, and antique Chinese vases, the latter with figures of birds and flowers; there is a Bullant vase with decorations of warlike design, and a Pompeiian vase with shapely figures of the seasons. There are also Lille vases, with ewers and cups of various patterns, and among the pieces by Bonnuit is a coffee service with flowers in enamel edged with gold. Of Sandoz baskets ash-stands, and ring-stands there is a large collection, and of works in what is termed biscuit of porcelain there are reproductions of some of the most famous works of the past and present centuries. Finally, in a separate case, there is a group of porcelains never before displayed in public, illustrating a new decorative method whereby the coloring is applied simultaneously with the process of manufacture.

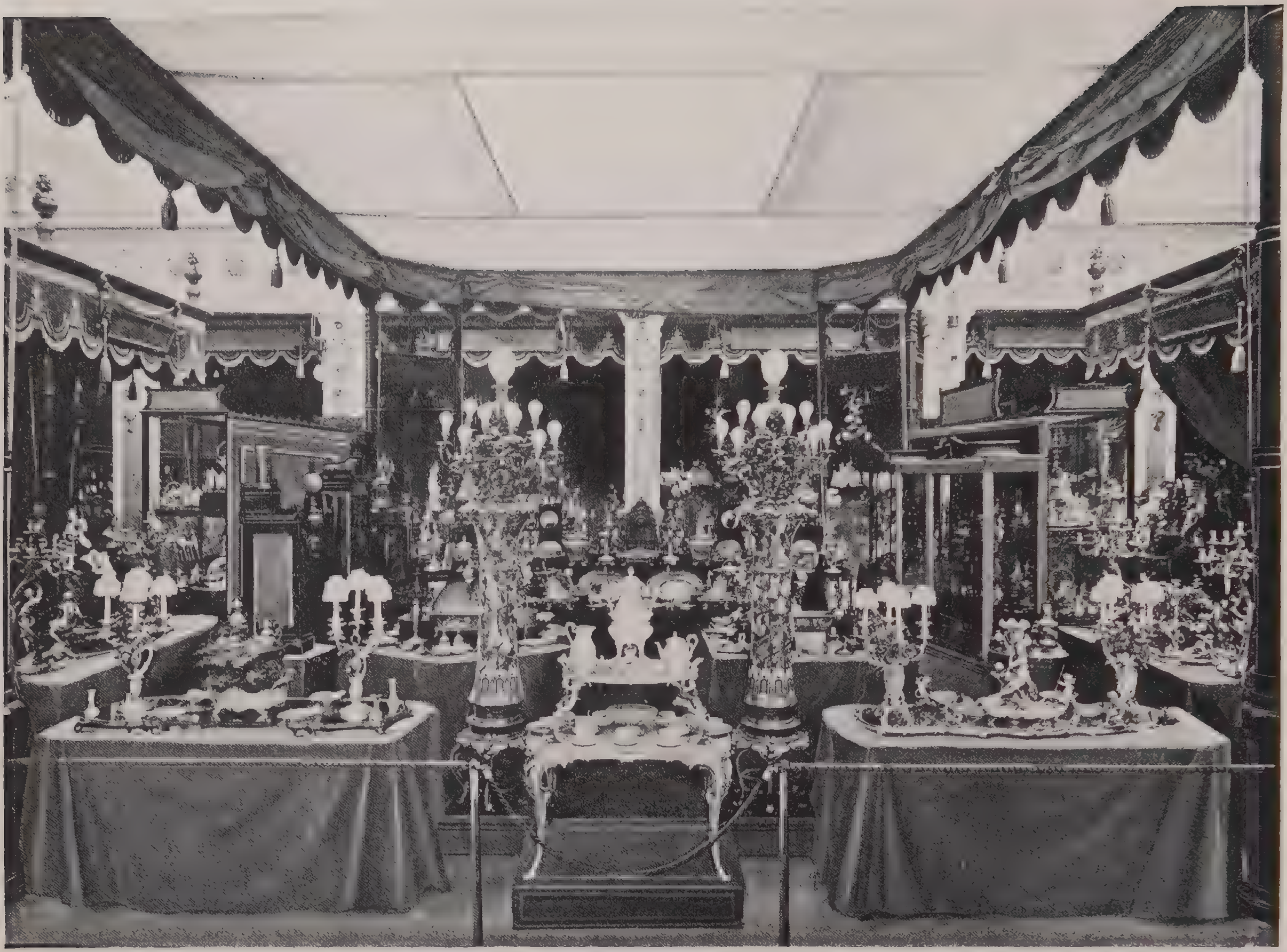
On the eastern side of the French section are collections of bronzes, silverware, jewelry, and gems, some in separate pavilions and others arranged along the outer walls. In a central position are two gilded bronze candelabra, with life-size figures supporting branches for incandescent lights, interlaced with a net-work of gold filigree. A reproduction in bronze of The Defense of the Flag represent a company of soldiers surrounding



FURNITURE



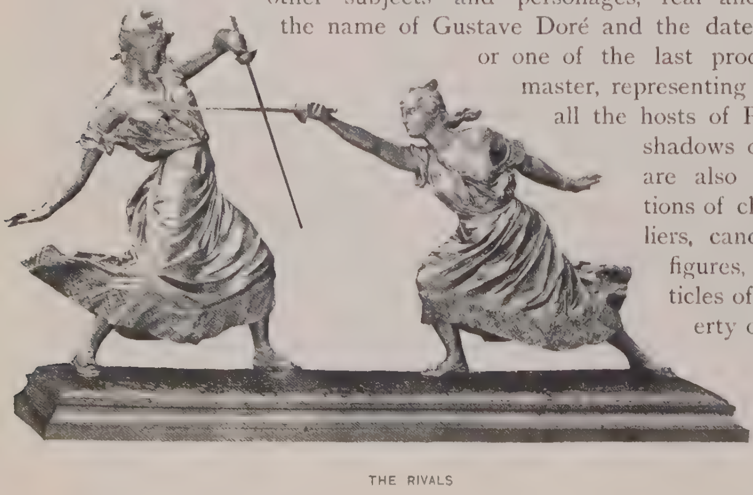
MAIN ENTRANCE FRENCH SECTION, MANUFACTURES BUILDING



SILVER BRONZES AND GILT WARE

a battery, their features and attitudes reproduced with life-like fidelity, and forming a portion of the group is a bronze replica of one of the bas-reliefs of the Arc de Triomphe reduced to one-third of the actual size. A striking figure is that of Charles V of Spain, taken from the original at Madrid. In one of the corners is reproduced a Vatican bronze of Augustus Cæsar, and in another is La Zingara, with conventional tambourine and pirouette. Of Napoleon the great there are several figures and busts, but for Napoleon the little no place was found among this assemblage of the mighty dead. In Napoleon's Last Days the victor of Austerlitz is represented in sitting posture, a robe falling from his shoulders, on his knee a map of Europe, his hand resting on the country which owed to him her glory, and in his features an expression of unutterable despair. Near by are marble busts of the emperor, bronzes of Shakespere and Milton, of Mars and Minerva, of the four seasons, and of countless other subjects and personages, real and mythical. Bearing the name of Gustave Doré and the date of 1877-8 is the last or one of the last productions of the great master, representing Bacchus, Cupids, and all the hosts of Pan sporting amid the shadows of leafy vines. There are also cabinets with decorations of chased bronze, chandeliers, candelabra, statuary, hall figures, vases, clocks, and articles of bric-a-brac, the property of royal households.

As to silverware, it is claimed by the French that only by their artificers is reproduced by the



THE RIVALS

BRONZE

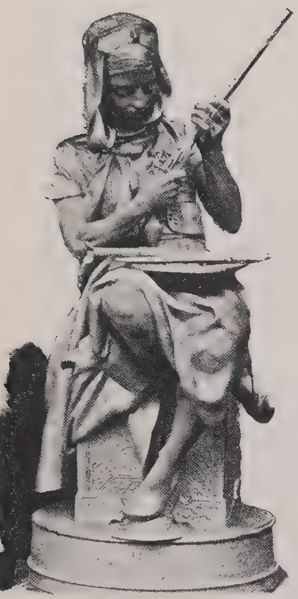
hand of man the handiwork of nature, through working from the inside of the piece and pressing on the outer side the figures fashioned by manual elaboration from approved designs. In a toilet set, for instance, containing twenty pieces and valued at $6,000, the smallest of these pieces was hammered into shape, and each one represents some natural object. Near to it is a coffee set of only three pieces worth, to the maker at least, $2,300, while of a third in plain silver, and with dull finish, the price is $2,600. In a banquet set of thirteen pieces the jardinière is of solid silver, and in a stand for grapes the trays are modelled in imitation of lotus leaves. In two corner cabinets of oak, fashioned as receptacles for silverware, the enamelling of gold, silver, and cobalt was done by hand, and represents the work of an entire year. An ebony jewel cabinet of the renaissance pattern, also with gold and silver enamelling, supports a marble globe, around which curls a golden vine in tracery as delicate as frost work. The interior is finished in ivory, and on one of the drawers is an intricate design resembling a tablet, but which, on touching a secret spring, reveals a steel-lined safe. Twenty-five thousand dollars is the price of this cunning piece of workmanship, together with a pair of lamp-stands in repoussé work, finished in gold and gilt. The manufacture of jewelry is well represented, and in this, as in silverware, some of the foremost of Parisian firms have furnished an elaborate display.

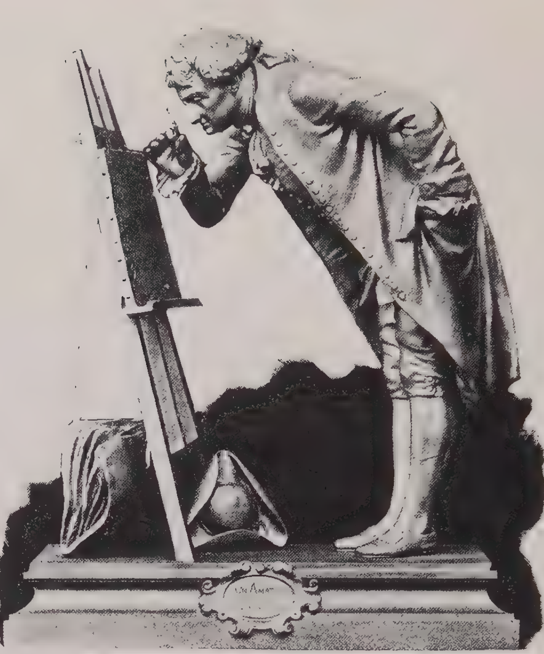
PERFUMERY

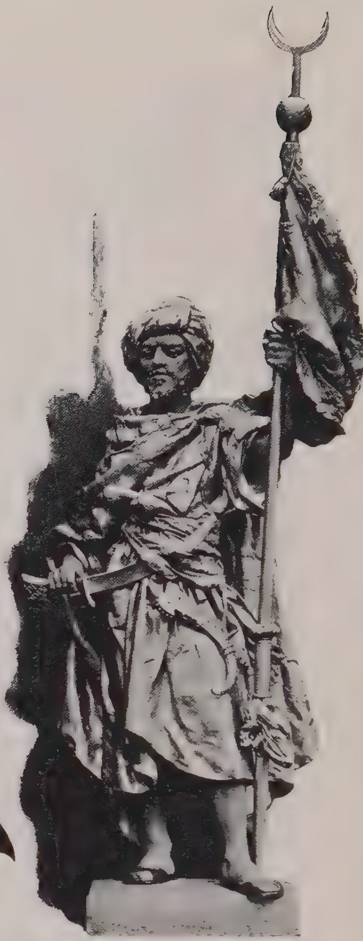
In ceramics there are excellent exhibits, including one intended to illustrate the reproduction of ancient forms, materials, and colors. In brick and tile work is an imitation of the famous pottery frieze of Persepolis, its columns and figures reduced to about one-fifth of their actual size, and yet large enough for a building of ordinary dimensions. Of vases, including one of the Alhambra pattern, there are many which even an expert cannot readily detect as copies. In china-ware France is seen at her best, as also in her display of mosaics, next to the collection of bronzes.

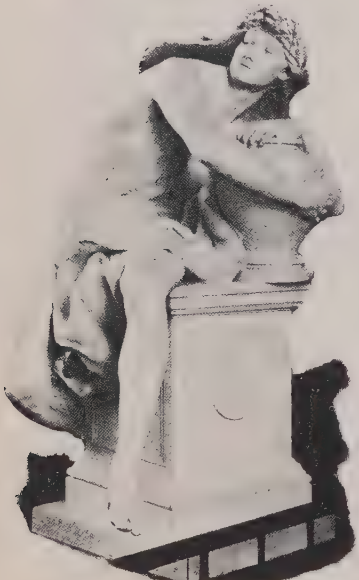
In the line of furniture and upholstery there are exhibited some of the most elaborate articles of Parisian make, including Gobelin tapestries and the richest of drawing-room and other decorations, with sets and pieces of all descriptions, some of the smaller articles ranging in value from $1,000 to $5,000. But in this section the most attractive feature is a reproduction of the antique furniture contained in the royal chateaux of the Bourbons.

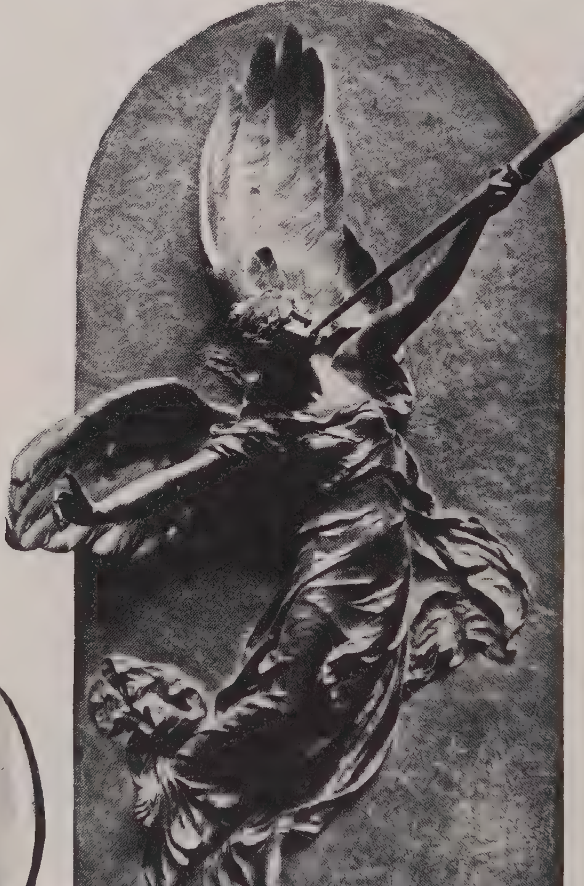
FRENCH CERAMICS

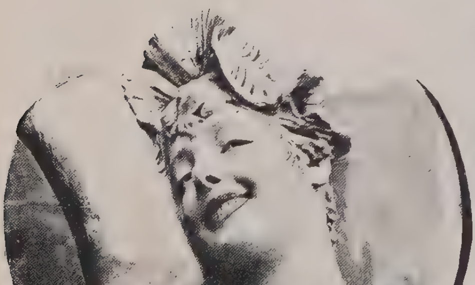


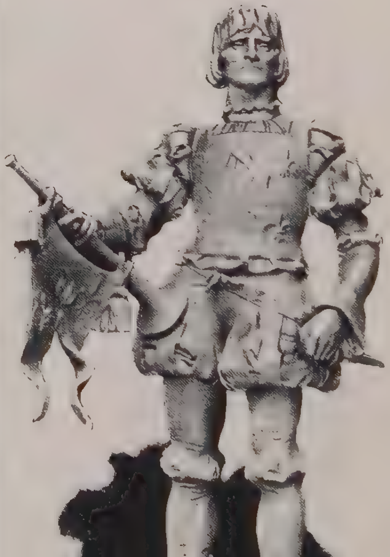












FRENCH BRONZES

1 AN ARAB WARRIOR
5 A MUSSULMAN CHIEF

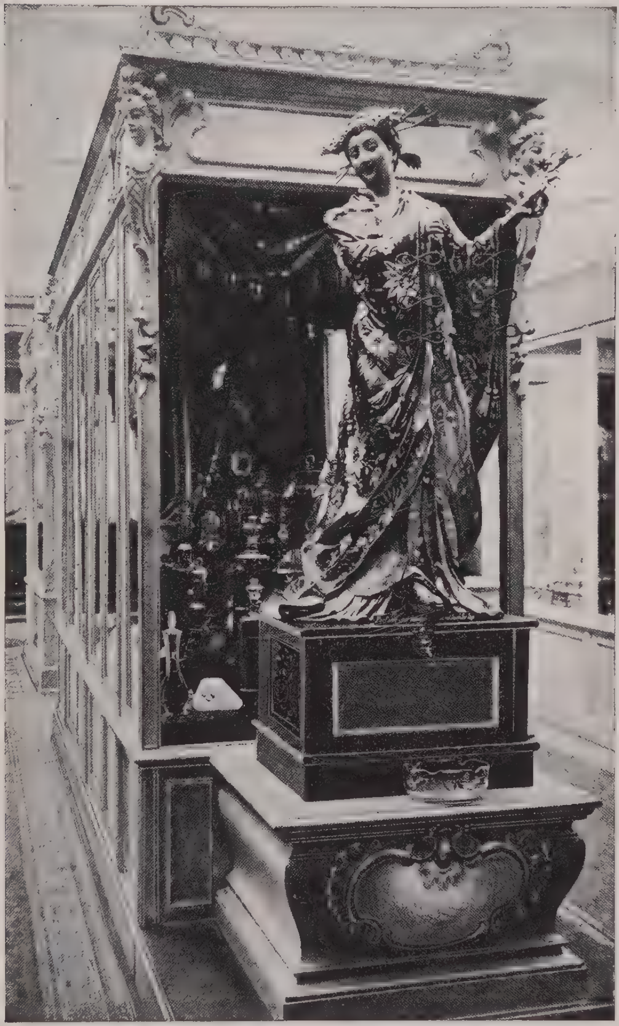
2 AN AMATEUR

3 GUARDING THE SECRET OF THE TOMB
6 LAUGHING GIRL

4 ANGEL OF THE RESURRECTION
7 HERALD AT ARMS

REBECCA

CUPIDON RAVISSEUR



PERFUMERY

In a corner of the pavilion opposite the clock tower is the display of laces and embroideries, as to the merits of which it need only be said that they are French. To produce a single exhibit in the form of a double pair of lace curtains, valued at $6,000, was the task of several hundred women, and of another pair of chrysanthemum design the price is $1,500. For the decorative work of a parlor, fashioned in gold thread, and resembling that of a chamber in the castle of Rambouillet, is also demanded the sum of $6,000. Still another feature is the clothing department, where, attired in the latest Parisian costumes, are figures in wax representing a bridal scene, with the bride surrounded by her bridesmaids and receiving the finishing touches of her toilet. The clergyman is also there, the ushers and the audience, the best man and the groom, awaiting his fiancée, who is about to set forth for church.

In three compartments on the eastern gallery floor, above the French pavilion, with which they are connected by stair-ways, are the exhibits of silks and woolens, representing industries whose volume of production is little short of $200,000,000 a year. All these apartments are fashioned in imitation of royal salons, their walls hung with tapestries, their finish in cream color and gold, and the friezes decorated with floral garlands. In the display of silks are samples from more than forty factories, most of them from the looms of Lyons, and including fabrics varying in price from a few cents to $100 a yard. In one of the chambers is a collection of crapes and grenadines, gauzes, nets, and other delicate fabrics, largely the productions of Lyons, with her 150,000 weavers. Ecclesiastical vestments and decorations are the specialties of one of the exhibiting firms, its cases containing also prayer-books whose text is woven in silk. By the Union of reelers and throwsters, so-called, manufacturing processes are illustrated, and among their display is a gilded mulberry tree,

PUCK

LA DANSE, PAR DORE

with cocoons hanging from its branches. Of plushes and velvets a Lyons firm has a rich assortment, and the ribbons of St Etienne are so arranged as to resemble silken garments rather than accessories of the costume.

Notable among the woolen groups is that of an industrial society of Rheims, including a complete display of domestic and foreign yarns, together with finished fabrics. In another collection are raw wools gathered from many lands and of many grades, from the finest to the coarsest, with dyed wools and yarns in a separate case, these forming the exhibits of a corporation known as the Anonymous society of wool-combers. Here is represented one of the great industrial organizations of the republic, with three establishments, a capital of $2,400,000, 2,500 employés, and using among other raw material 350,000 fleeces of wool a week.

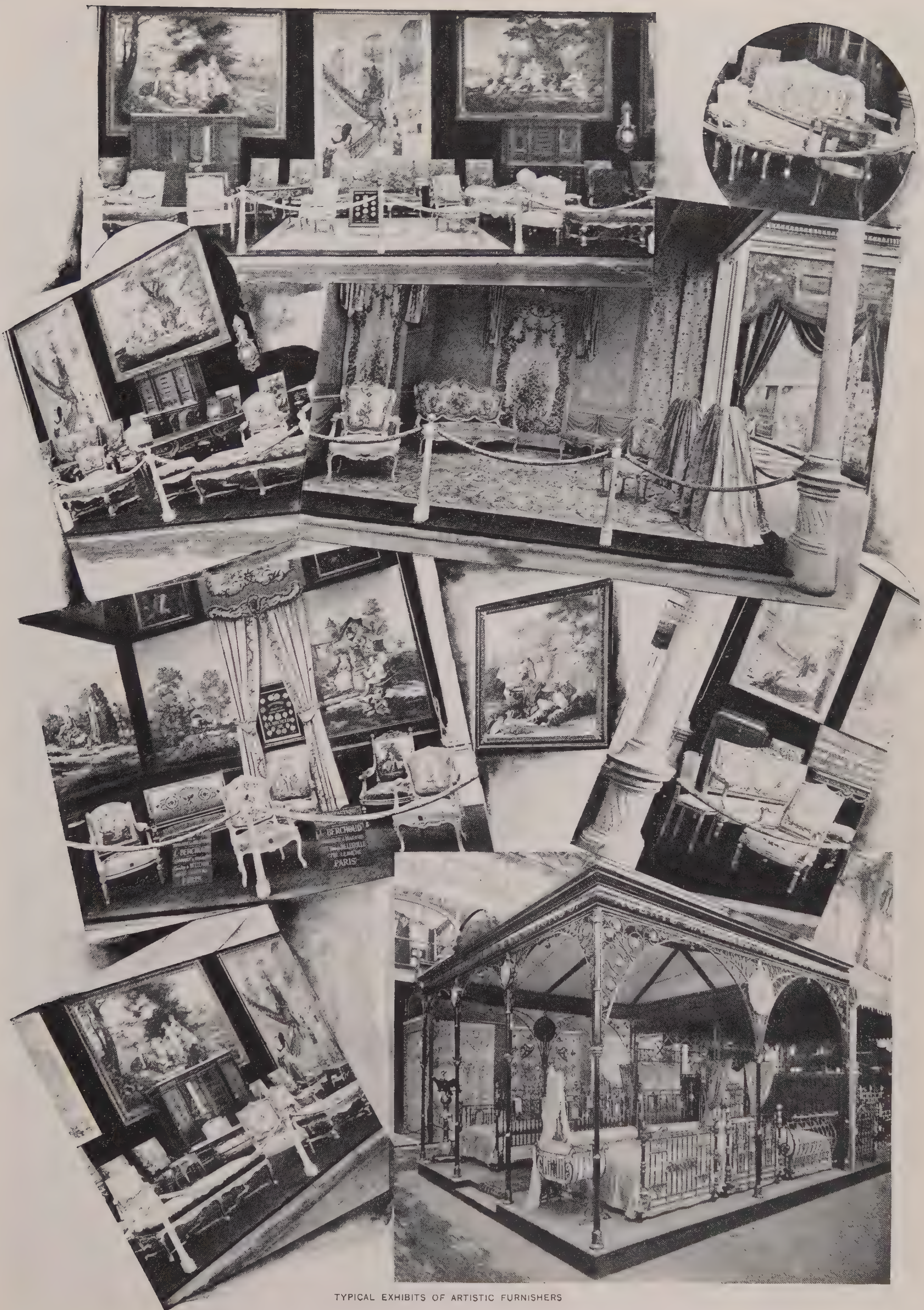
LES COUREURS

CHANT DU DEPART, FROM THE ARCH OF TRIUMPH

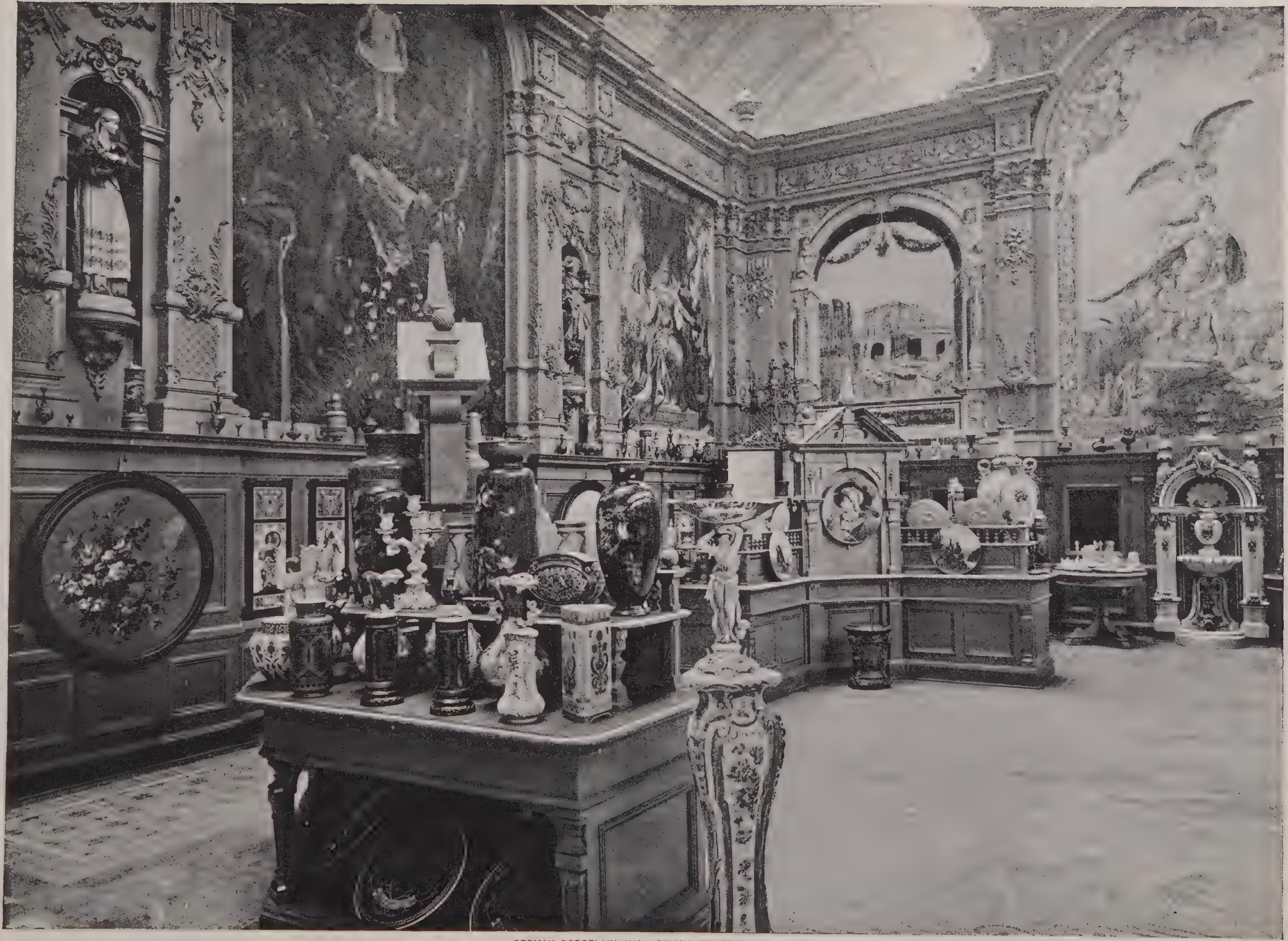
ORIENTAL DESIGN FOR RUG

Of cotton goods there are a few exhibits, and for children there is a chamber set apart, filled with dolls, dummies, and other figures fashioned in wax, wood, and metal.

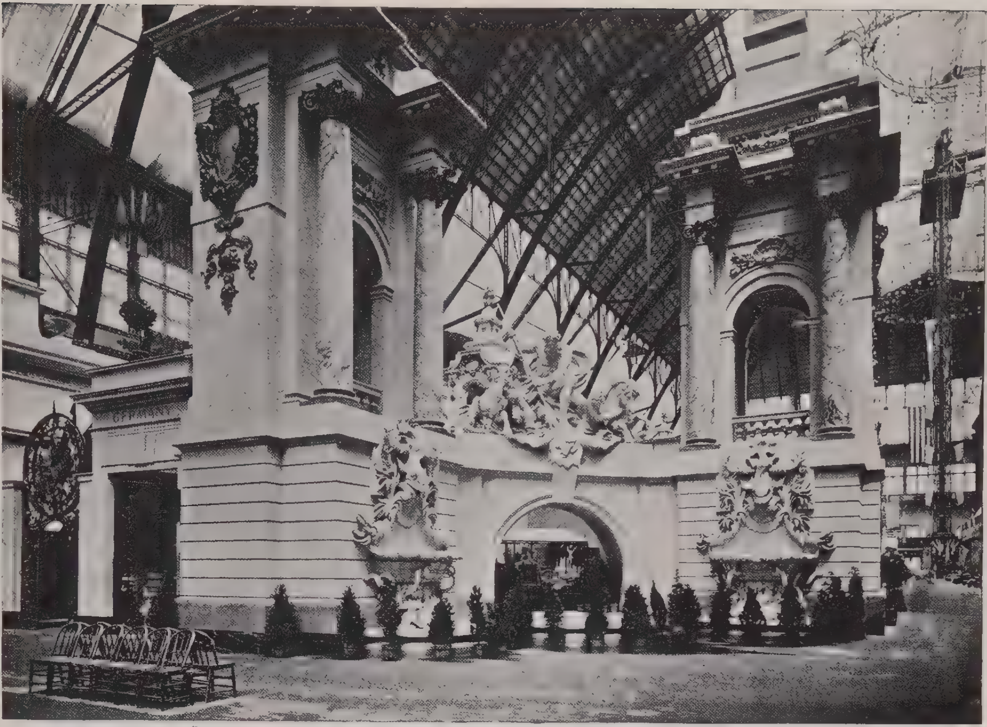
With its wealth of decoration in rich and costly tapestries, in paintings in oil and water colors, in statuary of bronze and marble, together with all the beautiful things that France has prepared for display, it is no wonder that the French section is one of the most attractive points in the hall of Manufactures and Liberal Arts. A token of the nation's interest in the Exposition is the group of statuary cast in bronze and placed by order of its government in the centre of the pavilion. In La France Republicaine, as the group is termed, a colossal personification of the republic is represented in sitting posture, her body girt with a cuirass, her right arm held



TYPICAL EXHIBITS OF ARTISTIC FURNISHERS



GERMAN PORCELAIN AND CERAMIC DECORATIONS aloft, and in her left a drawn sword guarding a tablet on which are inscribed the rights of man. On the head is a diadem fashioned in figures symbolic of liberty, equality, and fraternity, and on the pedestal are reproduced in carvings the leading incidents of the revolution.

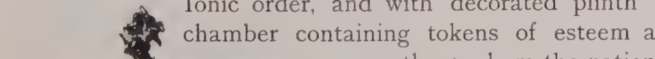

CORNER GERMAN SECTION

To Germany was given as a place of honor one of the four sections surrounding the central court of the Manufactures building, the remaining three being allotted to Great Britain, France, and the United States. In this, as in other departments, Germany is seen at her best, and of the total of all her exhibits, six times as large and ten times more costly than those at the Centennial Exposition, representing every commercial and artistic product of her empire, a large proportion is contained in her pavilion fronting on Columbia avenue, built after the style of the German renaissance and with rich and tasteful decorative scheme.

In a large rectangular space is reproduced the new German Reichstag, on the corners of which are towers surmounted by a dome, its apex in the form of the imperial crown, finished in burnished copper and overlaid with gold. In the statuary contained within are represented the foremost of German sculptors, their collections giving to it the appearance of an art repository. Among them are colossal statues of German emperors, and one in bronze representing Germania in the person of a female warrior, armor-clad and mounted on a richly caparisoned charger. In her right hand is the national flag, and in her left a shield, emblazoned with the imperial eagle. On one side is a youth with sword and laurel branch, grasping the bridle of the horse, and on the other the goddess of victory, proclaiming the glories of historic battlefields.

Passing through wrought-iron gates of elaborate design, flanked with towers supported by columns of the Ionic order, and with decorated plinth upholding golden eagles, we come to a richly furnished chamber containing tokens of esteem and gratitude, and articles of presentation bestowed on those whom the nation loves to honor. Among them are addresses of welcome or congratulation, with more substantial gifts, to Wilhelm I, Friedrich III, and Wilhelm II, to Bismarck, Von Moltke, and the grand duke of Baden. There are also costly works of art, including prizes awarded by the present emperor to yacht clubs and in other fields of sport, with cups, caskets, bronzes, clocks, and articles of virtu illustrating the progress of industry and art as applied to such purposes.

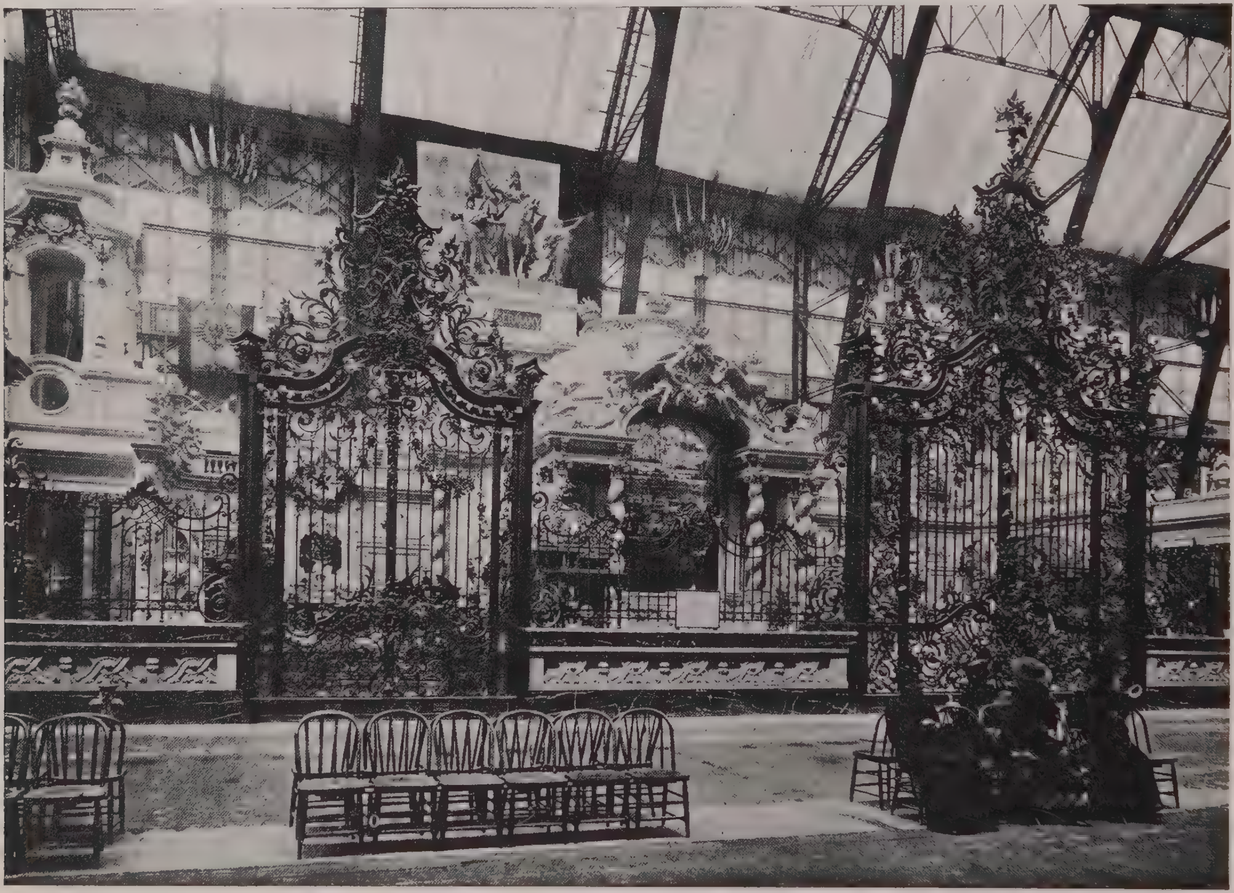
Adjacent to this section are the exhibits of gold and silver ware, jewelry and ornaments, clocks and watches, and ceramic art, the last including the display of the royal porcelain factory. Prominent among these groups is the collective exhibit of the jewelry and precious metal industries of Hanau, Pforzheim, and other German centres of these branches of manufacture. In this collection are some fifty exhibitors, and among their varied assortments it would be difficult to mention any article pertaining to the craft that is not here on exposition. To name them merely, together with those contained in the adjoining groups, would almost fill a chapter of my work. Suffice it here to say that they form a complete and most valuable illustration of a line of industry which, in



WROUGHT IRON GATES

the little Baden town of Pforzheim alone, gives work to ten thousand artizans, with an output of $10,000,000 to $12,000,000 a year.

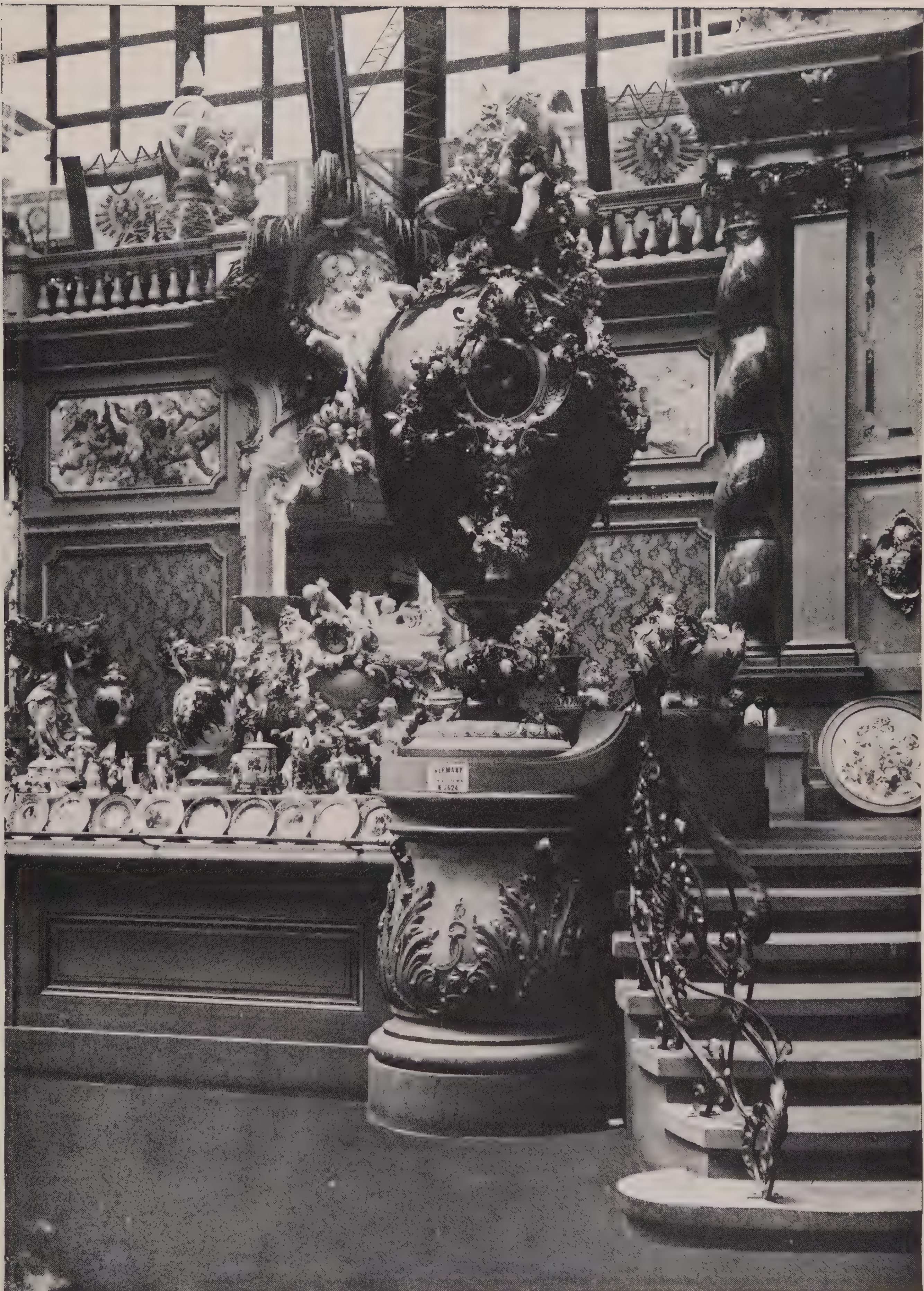
As a background to these exhibits is a portico with pillars of porcelain, and a huge allegorical painting on porcelain tiles, representing Germania surrounded by men who have won for themselves a name in the world of art. The central figure is of heroic size, and from her pedestal of fleecy clouds pronouncing a benediction upon the assembled group. In the foreground is Father Rhine, and above him the sculptor Peter Vischer and the artists, Hans Holbein, Albert Durer, and Burgmaier. Elsewhere are figures typical of commerce, industries, and art, with those of Guttenberg and of Gerhard von Rhiel, by whom were designed the lofty spires of the cathedral of Cologne, which forms the background of the picture. On either side are reproduced in a plaque of porcelain the weapons of medieval warfare bound in peaceful companionship by ribbons of silk. Curious are the twisted Saracen pillars that support the roof of the portico, to which there is access from stairways with wrought-iron balustrades. A bath-room is furnished in porcelain work of purest white, and in a dining-room the table is spread with porcelain work of choicest pattern. An alcove has for centre piece a mirror with porcelain frame of cunning workmanship, and above which is a plaque of Friedrich III, and in another alcove is a mantelpiece with sides in the shape of human figures, and above them cupids upholding a medallion. On the tile paintings which partially inclose these alcoves Cupid appears in the rôle of a professor, teaching the birds of the air to sing and the beasts of the field to dance. There are also life-sized fowl and feathered songsters, and overlooking the entire scene is a donkey gazing with the solemn stare that only a donkey can assume.



GERMAN SECTION.

Worthy of mention is the wrought-iron fence which guards this section of the German exhibit, 160 feet long, 40 feet high and 22 in width, its gates alone with posts and top-piece weighing more than twenty tons. In the central gate, its massive iron bars are filled in with delicate tracery work, and on the top is a basket of flowers resembling, except as to color, those made of wax. The decorations suggest rather the work of a goldsmith than such as was fashioned by hammer and anvil; yet all were made by hand, forming a six months' task for several score of the most skilful artizans of Frankfort-on-the-Main.

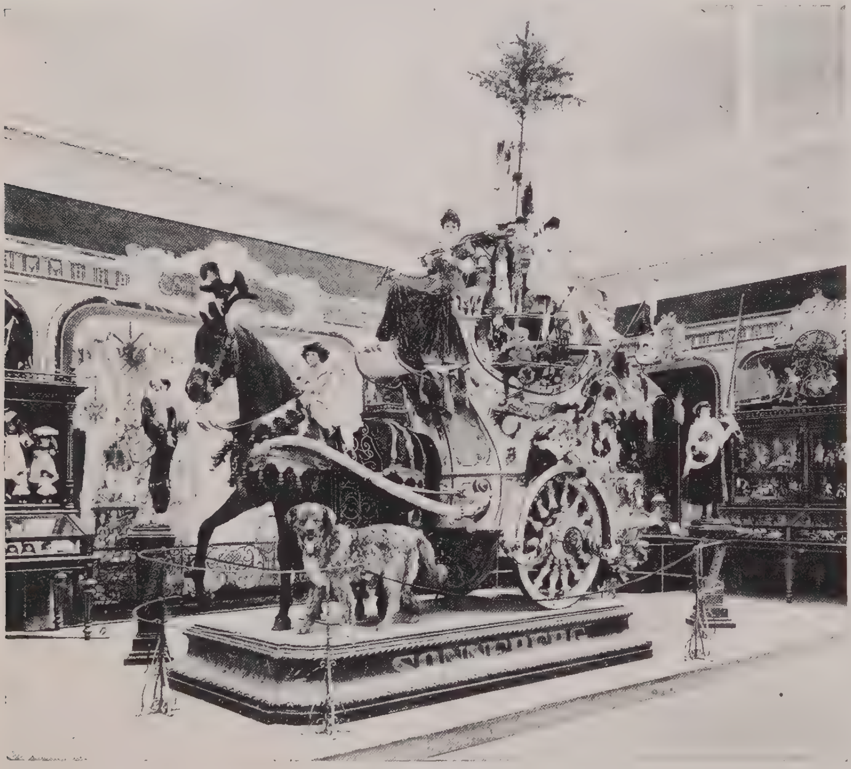
A centre of attraction is the Bavarian pavilion, fronting on Columbia avenue, and forming an integral portion of the German display. It is a temple-like structure, with arched central portico, and roof, cornice, and frieze richly adorned with statuary and bas-reliefs. In the interior are reproduced a German dining-room of the renaissance period, an imperial boudoir, and the presentation room already mentioned. In the first of these apartments the ceiling is quaintly panelled and the walls draped with dark velvet tapestry, relieved by vertical sections of richly embroidered cloth in brighter hues. Among its furniture is a colossal sideboard with glass-ware of



ROYAL PORCELAIN DISPLAY

rainbow pattern; on a centre table of antique fashion is a beer tankard three feet high, and a hand-made jewelry-box of iron, while the chairs are such as the kaisers might have used three centuries ago. The other chambers are furnished in lighter style, and especially the boudoir, the furniture of which, once the property of Ludwig II, came from a castle in the Bavarian Alps, and is so richly gilded as to resemble solid gold. The walls are hung with tapestry of blue velvet, heavy with floral designs in gold, and among the mirrors is one made up of forty smaller pieces in the rococo fashion of the sixteenth century.

In this pavilion also, as indicated by an inscription on the architecture, is a portion of the exhibits of the Bavarian art industry association, the remainder of which are contained in stalls or booths representing the various eras and phases of German life. Among them is a hunters' room of olden style, its walls adorned with antlers and stuffed birds, with shells containing the quaintest of tankards and beer-mugs, and in the centre a heavy oaken table and leather-seated chairs. Another apartment, illustrating the substantial luxury of the German renaissance period, is a dining-room, with oaken sideboards, cabinets, chairs, and tables of elaborate carving and design, with bronze busts and tall old-fashioned clocks, curtains of richly embroidered velvet, and wainscoting of gilded leather.



A CHILD'S DELIGHT

Passing these southward we come to a collection of stoves and cooking ranges, the first including specimens in decorated porcelain and earthenware, ten feet or more in height and with folding doors in the grate. Near them is a display of bronzes, and of embossed leather work, raised, colored, figured, and gilded by hand, with a tanned ox hide, from which the hair and horns have not been removed, indicating the principal material of which these articles are fashioned.

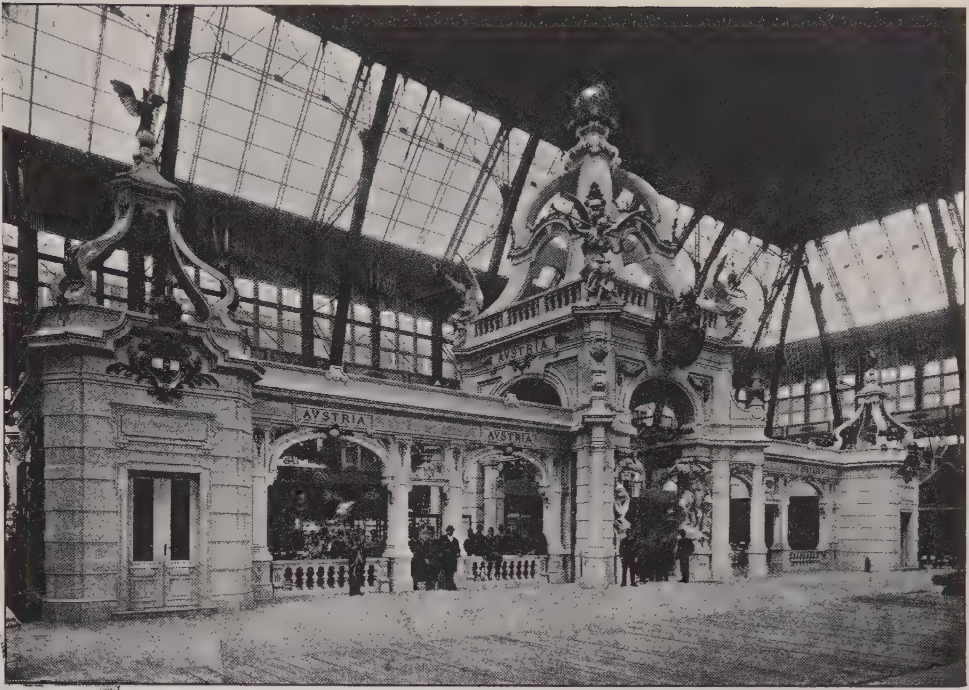
In the cutlery booths a single exhibitor has forty feet of show-cases containing every class of goods, from pocket knives to surgical instruments. In front of one of these cases is a pair of so-called ladies' scissors, six feet long and weighing the tenth part of a ton, with blades of mirror-like brightness and handles beautifully chased. There are also carving and other knives and forks of Brobdingnagian dimensions, contrasting somewhat strangely with articles intended for actual use. Adjacent to these are the collective exhibits of the German Engravers' Union, prominent among which is that of Prince Stollberg's works in the Hartz mountains, including breast-plates, helmets, shields, battle-axes, swords, and spears, such as were worn or wielded in by-gone centuries by German men-at-arms.

Among the minor exhibits is one representing a steamer at sea, wrought entirely of needles so skilfully arranged as to resemble the sheen of ocean. By a Munich toy factory is displayed a huge Santa Claus wagon, with children grouped among its contents, and above all a figure of Santa Claus. Seated in front is a young girl driving a stuffed horse, and at the side is a St Bernard dog. In a glass kiosk adjacent is a collection of toys representing in miniature all articles of daily use. A banqueting board, for instance, two feet long, is furnished forth for a score of guests, with the usual table ware, and with candelabra, wine glasses, and bottles of wine. Dolls there are in endless array, a toy kitchen and a toy stable with horses and hostler, and other exhibits from Thuringia factories. From the industrial museum at Nuremburg is a collection of scientific toys, including battle-ships three feet long, manned, armed, and equipped, with tiny ocean-going steamers, steam-engines, and electrical machinery. By Nuremburg firms is also displayed an assortment of drawing materials, mirrors, and other wares among their toy exhibits, inclosed in a large panoramic painting of that ancient burgh.

In Germany the origin of ceramic arts is almost as ancient as her empire, and in her samples at the Fair are all descriptions of workmanship, from the crudest efforts of by-gone ages to the most finished products of the present day. There are few German industries of more importance than those represented by her glassware and potteries, and none perhaps to which she points with a more becoming pride.

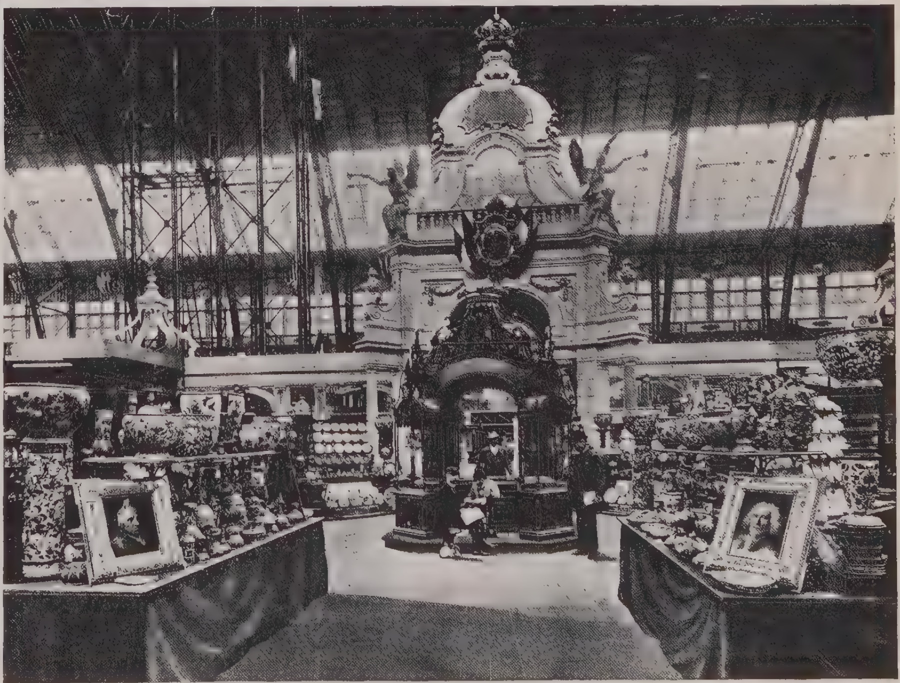
Among the exhibits of metallic wares is one of hammered copper goods, including crucifixes, chandeliers, and vases, some of them fashioned by hand out of a single piece of copper. By the manufacturers of the iron gates, already noted, is displayed a large collection of specimens hammered out of iron by hand work and among these groups are illustrated the results of patent processes for the enamelling of iron goods with such perfect finish as to resemble porcelains and china-ware. Among them are flower-stands, inkstands, vases, shields, consol and card-tables, and numerous articles for table use.

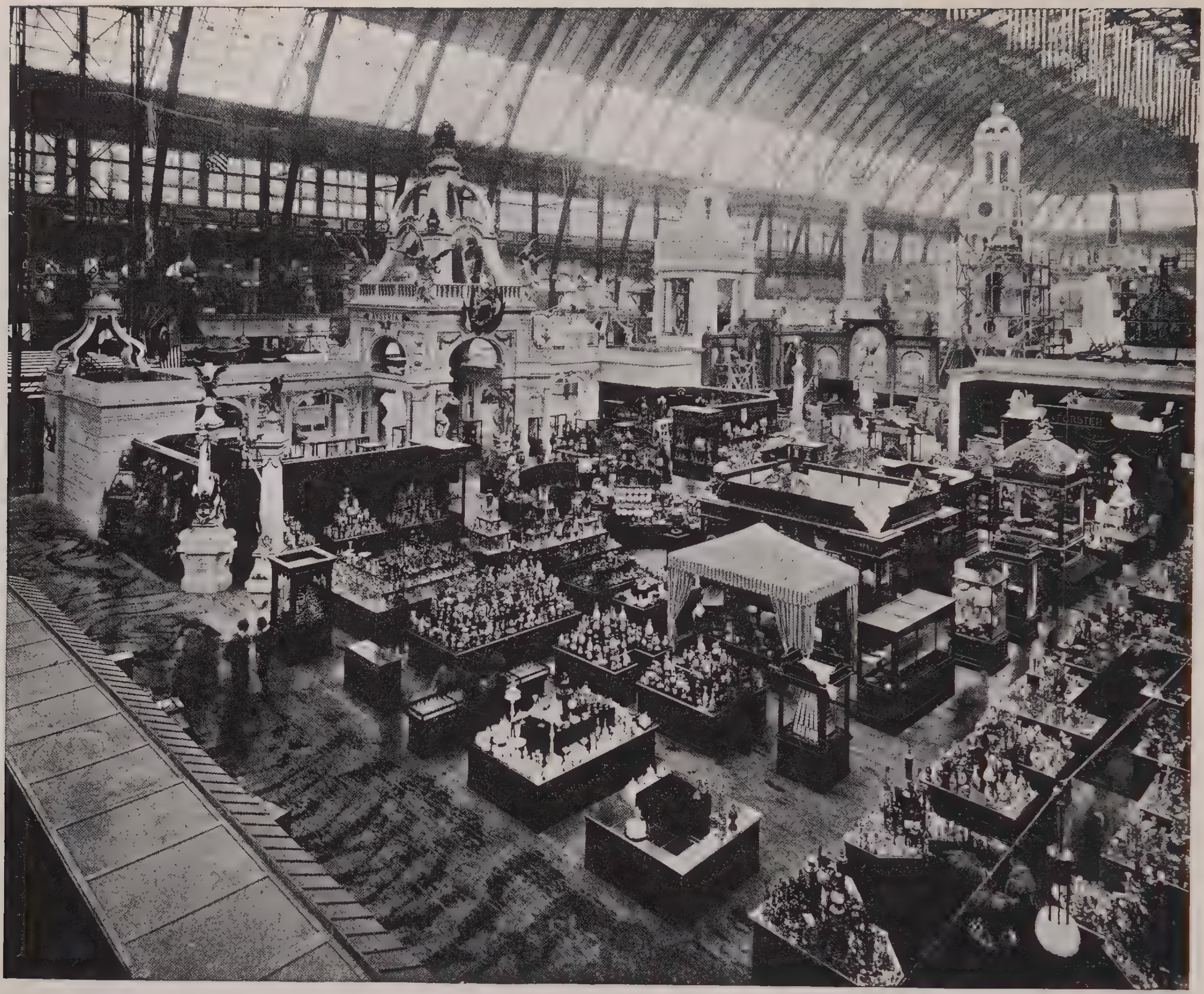
In textiles Germany is well represented, with individual exhibits so combined that a single group may contain the choicest products of a score of factories. In one of the windows, for instance, a number of firms unite in displaying all the processes of silk manufacture, from the cocoon to the completed fabric. Side by side with dress goods and trimmings are silks prepared for upholstery use, for neckwear, umbrellas, and parasols, all these from the mills of a single town. Another town makes a specialty of laces and embroideries, and a third has an assortment of knit goods in woolen, silk, and cotton. Still another excels in lace curtains, which are displayed on the surrounding walls in most elaborate designs. From a state institution at Schneeberg comes an assortment of hand-made laces; from Reichenau a choice display of woolens, and from Glauchau of the women's dress goods produced by the mills of Saxony.


EXTERIOR VIEW AUSTRIAN SECTION

IRON EXHIBIT

Adjacent to the German section is the Austrian pavilion, and passing between its massive pillars and beneath an arch surmounted by the national Eagles, attention is first attracted by the life-size portrait of Emperor Francis Joseph, woven in cotton and silk by the power loom. This is said to be the first work of the kind executed by machinery, and comes from a Vienna factory. A photograph was first enlarged on a scale of more than fifty to one, the image being reflected on a linen sheet. The outlines made from this served as the foundation for the likeness, which was reproduced on one hundred sheets, composed of nearly 20,000 cards, and the cotton and silken threads of the design drawn through millions of holes


INTERIOR VIEW AUSTRIAN SECTION



AUSTRIAN SECTION

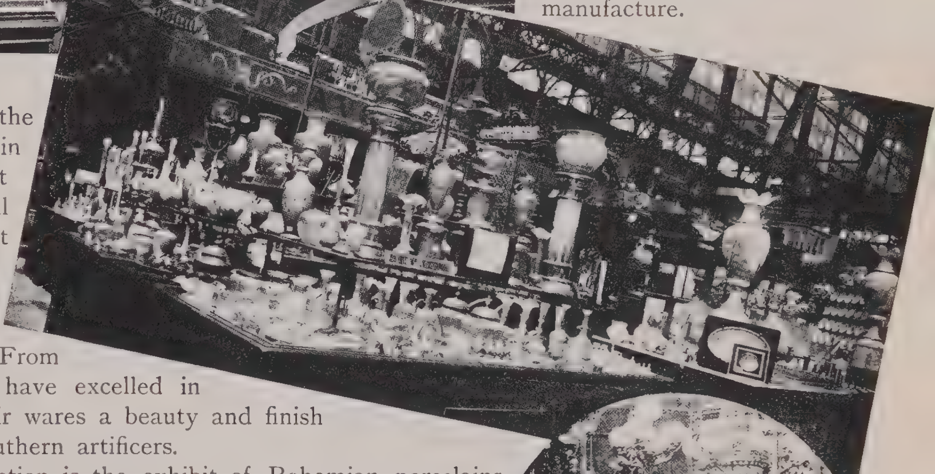
SPANISH FLOWER MERCHANT

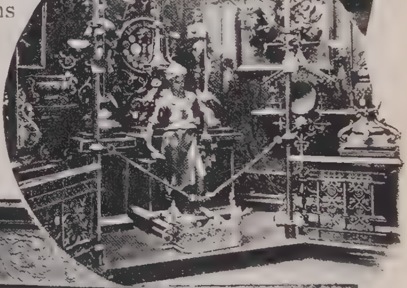
BULGARIAN GIRL

SPANISH FLOWER MERCHANT

punctured on the surface. An entire year was required for this task, and no wonder that the delicate lines and shadings of the finished portrait aroused the admiration of the emperor, to whom it was presented. With his permission it was placed on exhibition in the Austrian section as one of the triumphs of textile manufacture.

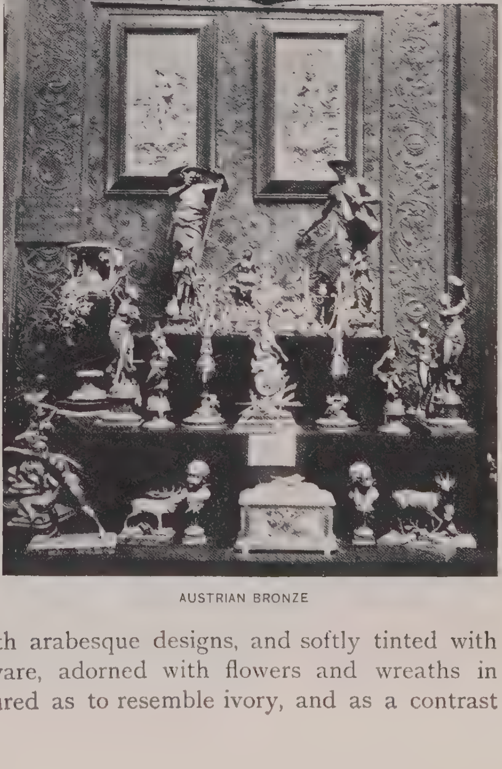
BOHEMIAN GLASS





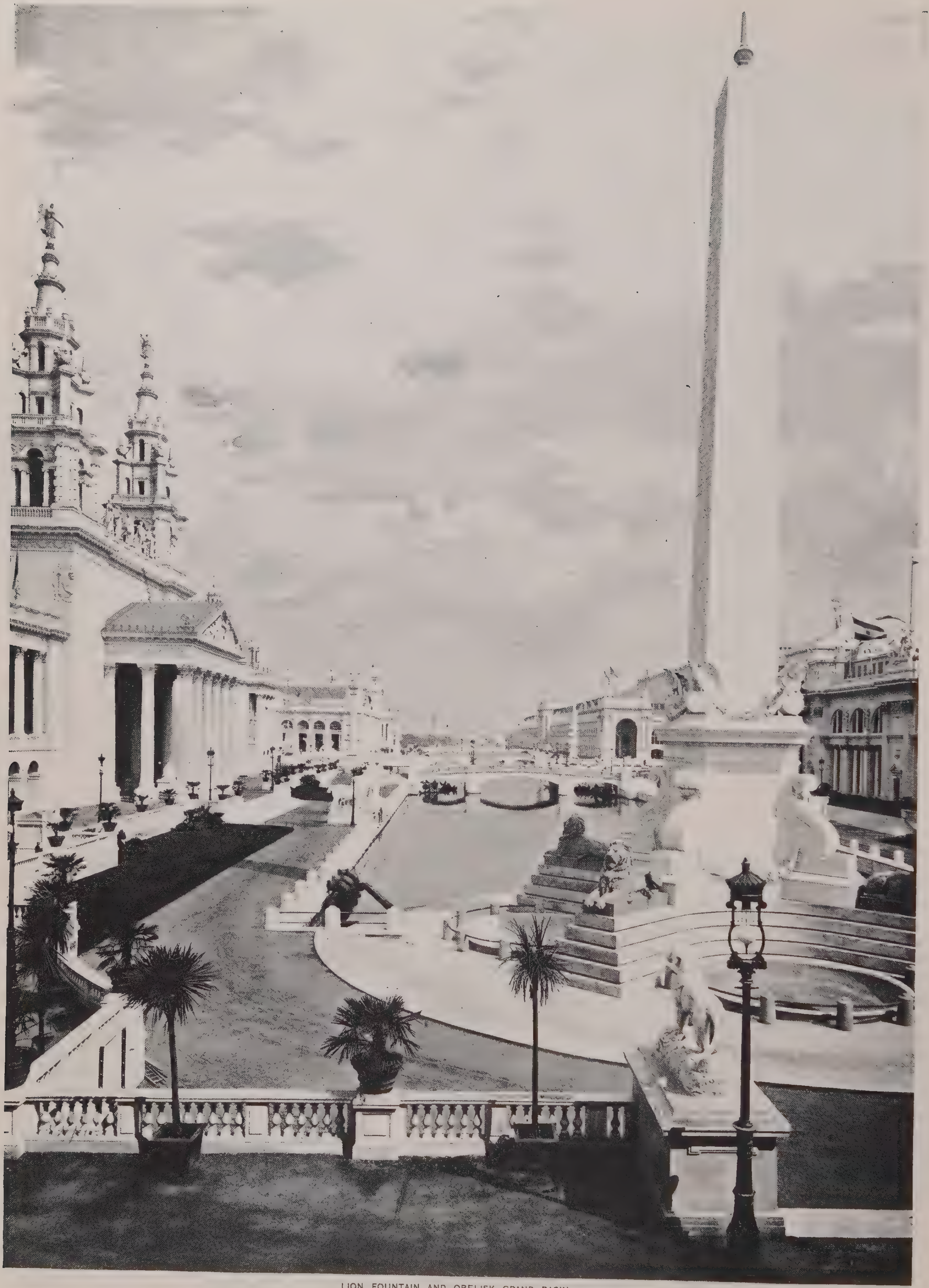
As in the German section and the German village on the plaisance, so in the Austrian pavilion, one of the most attractive exhibits is that of art metal work, especially of vases, plaques, ancient armor, and imitations of ancient handiwork. A fine display of bronzes is made by Camerden and Forster, agents in New York for the manufacturers. From time immemorial the Germanic races have excelled in this line of manufacture, giving to their wares a beauty and finish which is not found among those of southern artificers.

AUSTRIAN BRONZE

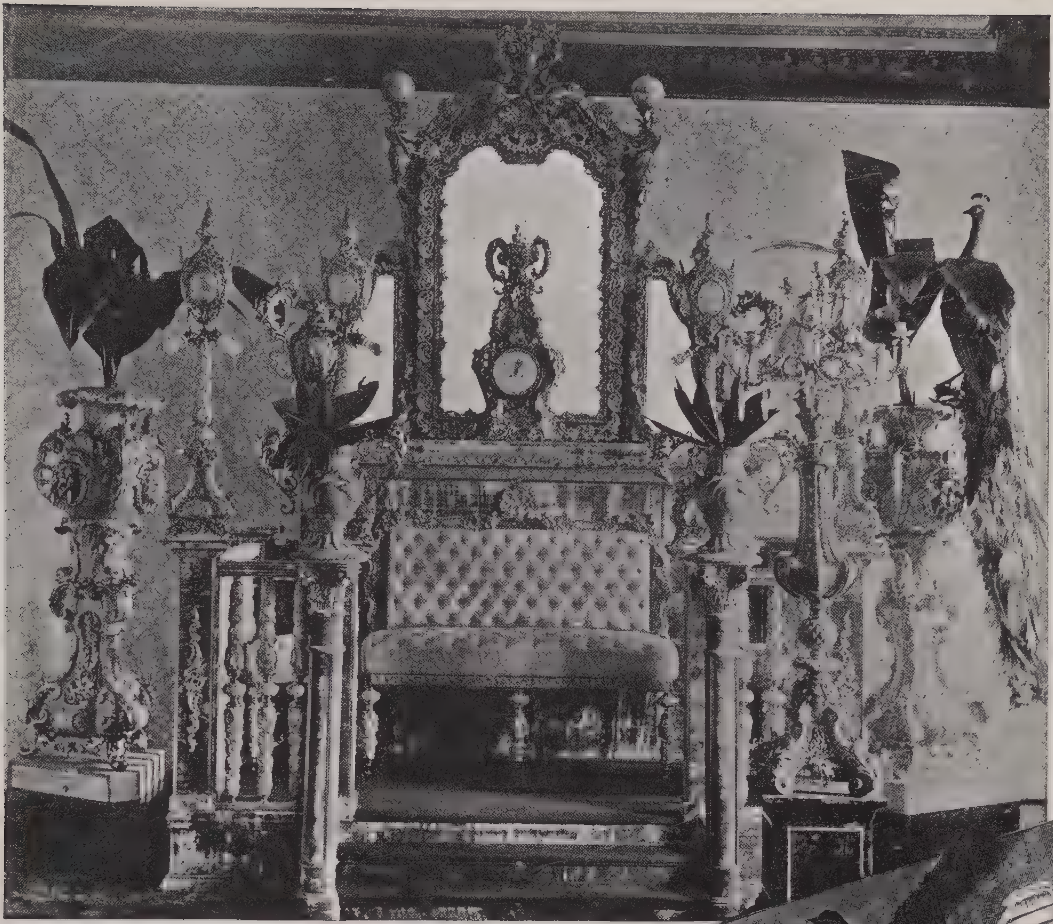


AUSTRIAN BRONZE

But the gem of the Austrian section is the exhibit of Bohemian porcelains and glassware. It was at first intended to establish temporary works in the Midway plaisance, where would be shown all the processes of manufacture; but for some reason this project was abandoned, and we see only the results. No mere factory, however, could explain how for many ages this industry has descended from father to son, each generation patiently striving to improve on the workmanship of its predecessor. The display is therefore the illustrative and collective result of centuries of individual endeavor. All the famous factories of Bohemia have contributed to the exhibit of glassware, which is placed, as it should be, in the foreground. As a centrepiece is the tall vase, fashioned in imitation of onyx, and loaned for the occasion by Emperor Joseph. Side by side are huge punch-bowls and tiny glasses, ornamented with arabesque designs, and softly tinted with the hues of wax or pearl. There are entire services of porcelain ware, adorned with flowers and wreaths in gold and light blue; there are beautiful statues of clay so manufactured as to resemble ivory, and as a contrast



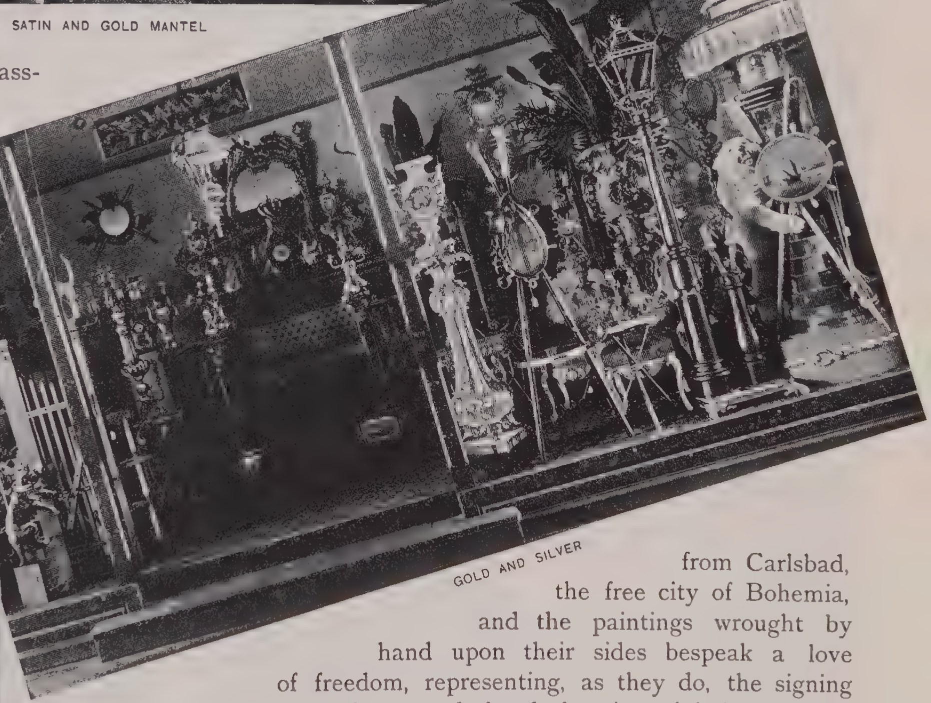
LION FOUNTAIN AND OBELISK, GRAND BASIN



SATIN AND GOLD MANTEL

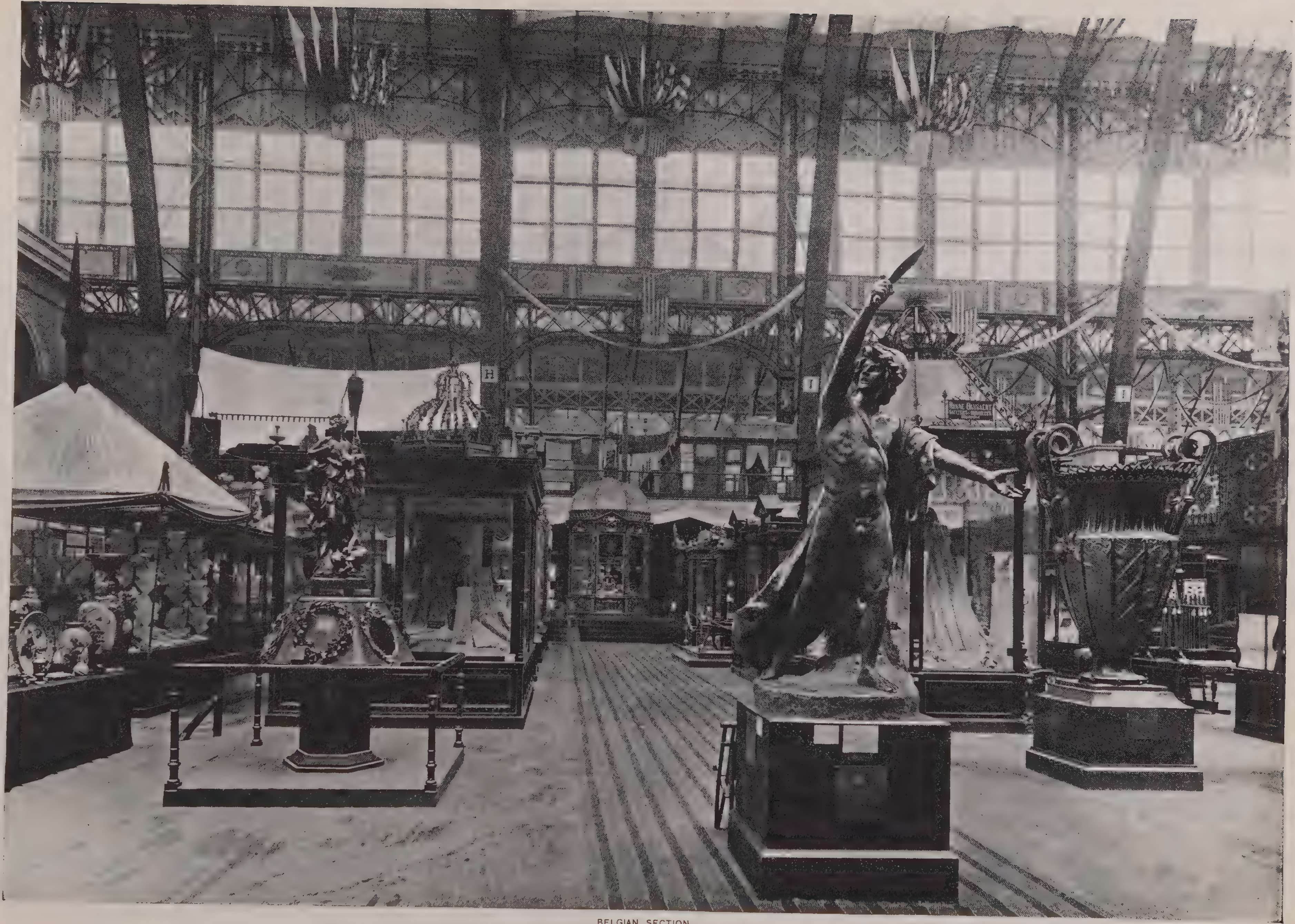
rose-colored pieces of Pompeiian glassware.

Around a huge jardinière is a group of decorated porcelain, in royal blue and gold, and near by are two revolving urns, towering above the head of the tallest visitor. The last are from Carlsbad, the free city of Bohemia, and the paintings wrought by hand upon their sides bespeak a love of freedom, representing, as they do, the signing of the magna charta and the declaration of independence, the taking of the Bastile, and the abolition of slavery. Vienna contributes the most varied assortment of fancy articles, together with a large collection of jewelry and gold and silver ware, while the entire monarchy may be said to have an interest in the model room, under the gallery, royally furnished and decorated. By mural paintings and shrubbery plants the background is made to represent a conservatory opening from a beautifully frescoed chamber. The gilded,



GOLD AND SILVER

ALTROHLAU VASES



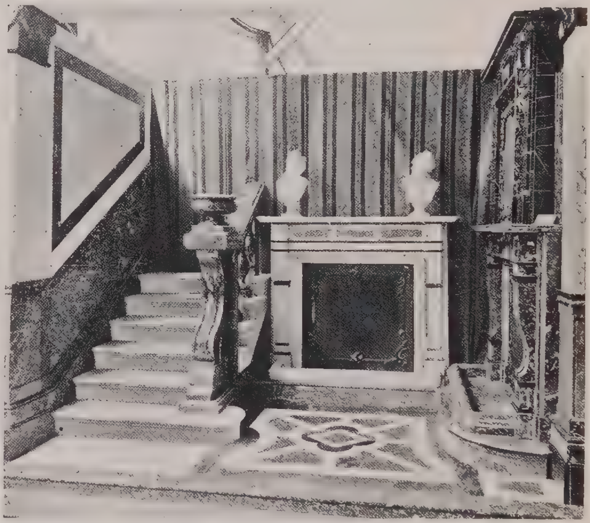
BELGIAN SECTION

heavy furniture is upholstered in rich Gobelin tapestry, and includes a grand piano in ivory and gold, and a huge Moorish clock with fret-work of cunning design.

In the line of leather goods are tables, chairs, and other furniture made of pressed leather, wall decorations and specimens of book-binding, ancient and modern. A treasure guarded with jealous care is a bible bound in silver, its covers hand-carved and inlaid with gold and on the front a vine traced in topaz.

BELGIAN SECTION

To the Belgian section was accorded a site adjacent to the French pavilion, in recognition of the close geographic and commercial relations of the two countries. Here we have the nearest approach to a purely national display contained in the hall of Manufactures, for the entire enterprise was organized by chambers of commerce among such cities as Brussels, Antwerp, Ghent, Liège, and other centres of commercial and industrial activity. From each of these bodies members were selected by the king, forming together the Superior Council of Industry, whose special duty it was to see to the choice and preparation of the various collections. The result is a well considered, well proportioned, and skilfully arranged exhibit.



MARBLE EXHIBIT, BELGIUM

The pavilion, which is of itself a product of native skill and taste, was fashioned by Belgian workmen before being shipped in sections to Chicago. It is of the same height as the French structure, and its lofty central portal, draped with rich garnet portières, forms a sightly entrance way. Within is a bronze statue of Leonidas at Thermopylæ, by Gaef, one of the foremost sculptors of Bruges, more than seven feet high and cast in a single piece, on its left a bronze urn, and on its right a dainty statuette representing Innocence Tormented by Love.

VASE, BELGIUM

First among the exhibits are the finest of Belgian laces, including Valenciennes, Venetian point, Venetian guipure, duchesse, and Mechlin. Near them are the daintiest of shawls and bridal veils, one of the latter made of round point lace, fifteen feet long and a dozen in width, being valued at $7,000, while for a lace shawl with very few feet of its precious surface twice that sum is demanded. Other textiles of more substantial character, as linens, cottons, and dress goods, though forming an excellent display, attract but little attention as compared with their costly environment.

Ceramic wares, in the form of vases, porcelain sets, and glassware, cut, etched, engraved, and stained, fill other portions of the pavilion. Deserving of special mention is the fine display of porcelains, table-ware, tiles, and mural decorations by a La Louvière firm. The exhibits of marbles is also worthy of note, including, among other pieces, a handsome staircase and fireplace, into which are worked eight different native varieties.

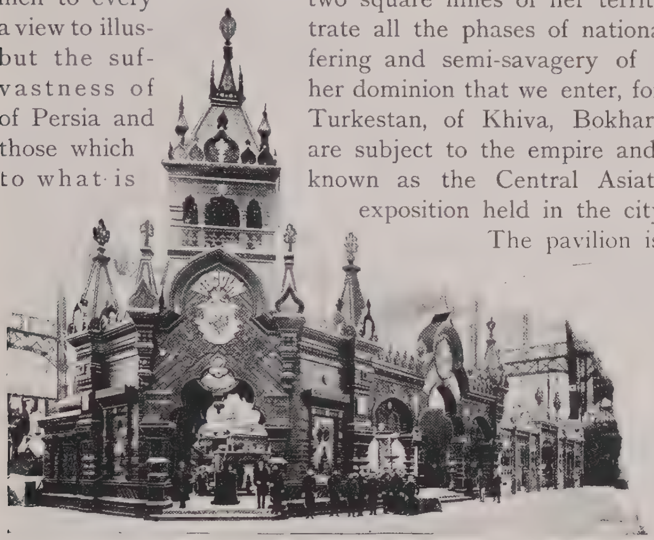
Liège has long been recognized as one of the great centres for the manufacture of small arms, both for military and sportsmen's use, its collection forming a prominent feature in the Belgian section. One of the largest establishments has a collection not only of guns, but of unfinished weldings, with a view to illustrate the methods of manufacturing

RUSSIAN SECTION

NORWAY SECTION

Damascus and twist barrels. But to enumerate all the branches of manufacture represented in the 45,000 square feet allotted to the Belgian department would be an endless task. Prominent among them are the draperies, decorative panels, and paintings, and other applications of art to household use. A suggestive feature also is the exhibit of soft felt hats and sombreros, of which many millions are imported by the United States and Latin America.

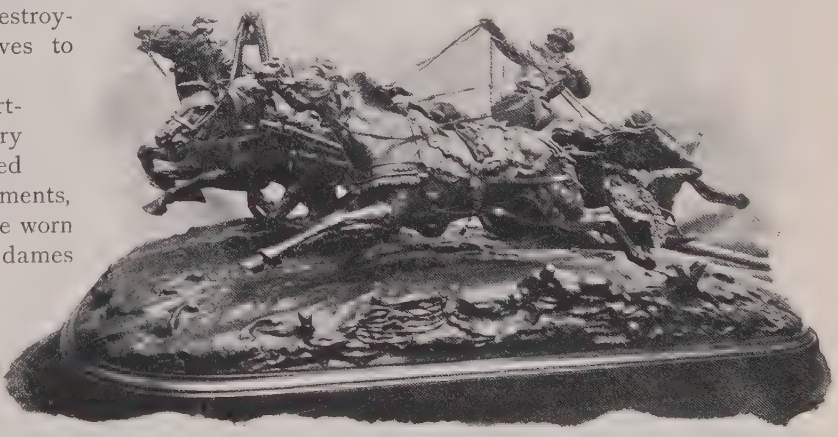
The vast empire of all the Russias, occupying nearly one-fifth of the land surface of the earth, is represented in the hall of Manufactures by some 40,000 square feet of exhibiting space, or about one square inch to every two square miles of her territory. The exhibits are arranged as they should be, with a view to illustrate all the phases of national life, representing not only the luxury and civilization, but the suffering and semi-savagery of the empire. Thus it is with a realizing sense of the vastness of her dominion that we enter, for instance, the Asiatic room, and here compare the fabrics of Persia and Turkestan, of Khiva, Bokhara, and southwestern Siberia. Other sections, including those which are subject to the empire and those which she is striving to render subject, contribute to what is known as the Central Asiatic exhibition, which was also displayed at a former exposition held in the city of Moscow.


EXTERIOR RUSSIAN PAVILION

The pavilion is of the ecclesiastic style of Russian seventeenth century architecture, with the principal entrance at the corner, in the form of a lofty arch surmounted by a tower, and with a smaller door-way in the centre of its façade, fronting on Columbia avenue. Near the main portal are two vases of red jasper, forwarded by the royal museum, and which it would be extremely difficult to duplicate, while the copies, in lapis-lazuli and malachite, of others in the royal palace at St Petersburg cannot be readily detected from the originals. Other vases and urns of most intricate workmanship are contained in this collection, with statuary and mantelpieces, fashioned of porphyry, obsidian, jasper, malachite, and various ornamental stones, aglow with nature's richest hues.

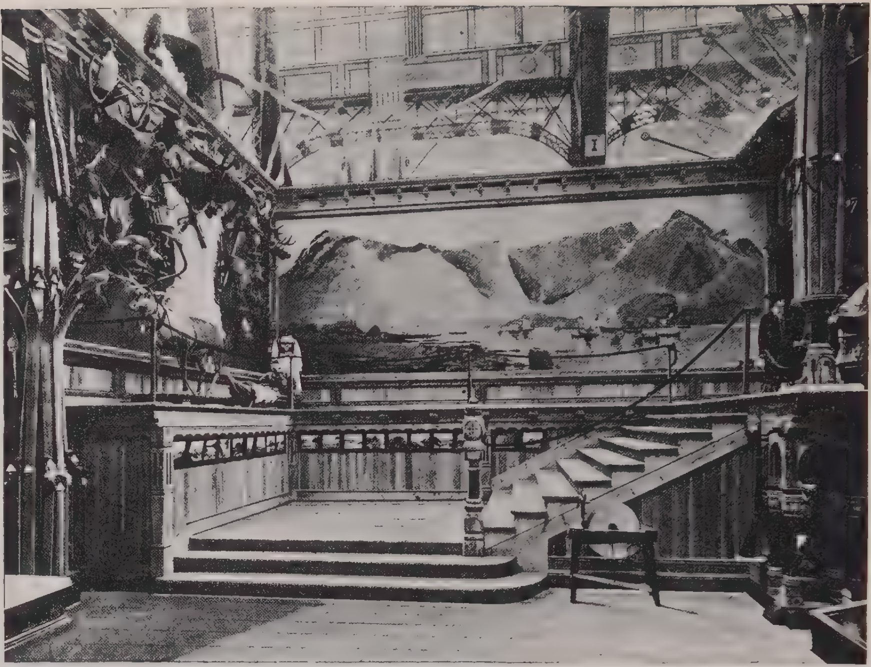
In the bronze collections, more than in any other are illustrated the extremes of Russian life, one group being devoted to the army and the government, which are virtually the same, and another to the lowly and suffering peasantry. In this exhibit are many pieces by the sculptor Lanceret, whose recent death was a loss to the empire and to art. In addition to these works are allegorical figures and statuettes in solid silver, one of them, mounted on red jasper, representing Alexander bestowing freedom on the serfs, and rescuing Bulgaria from the grasp of Turkey.

Silver-ware is displayed in many rich and attractive forms, much of it belonging to the imperial household. The enamelled variety indicates the revival of an ancient process of manufacture, which is gradually being extended to other countries. Some of the pieces seem almost transparent, so delicate is the material used, the designs being added by pouring melted enamel into the ornamental figures. The skill required to perform this operation and the danger of destroying an entire piece by a single mistake gives to these wares their high marketable value.


RUSSIAN BRONZE

Russian furs, which form a most important article of commerce, are displayed in every conceivable class and form. There are stuffed animals, skins, and robes, with costly garments, composed wholly or in part of furs, such as are worn by the highest officials, and by the titled dames of St Petersburg and Moscow. Garments also may be seen such as the Siberian huntsmen wear when in chase of the bear, the sable, the otter or the seal. Among other exhibits are many which tend to reveal the more luxurious phases of Russian life. Furniture is shown, made of native woods, artistically carved and ornamented, with the choicest of Russian silks and rich sacerdotal vestments, worked with gold and silver thread upon silken textures. In the more homely groups of cotton and woolen goods, the display is also creditable, St Petersburg, Moscow, and Piotrkov being well represented in these branches. In a word, except for leather goods, the crude metals, and a few other items, the Russian exhibit is almost a reproduction on a smaller scale of the great fair which for centuries has been held at Nijni Novgorod.

Norway's exhibits are for the most part divided between the Manufactures and Fisheries buildings, but with several in each of these departments which are officially classified with others. The Agricultural division, for instance, including food and its accessories, related machinery, and forest products, is represented in the hall of Manufactures by the displays of milk-condensing companies, of makers of liqueurs, wines, and malt liqueurs, and of the products of wood pulp mills. Various farming implements are shown, and an ingenious milking apparatus operated by a suction pump. The exhibit of timber for house-building purposes is mainly confined to the pavilion itself, which is constructed of Norway pine, and whose façade contains some excellent specimens of native carving in



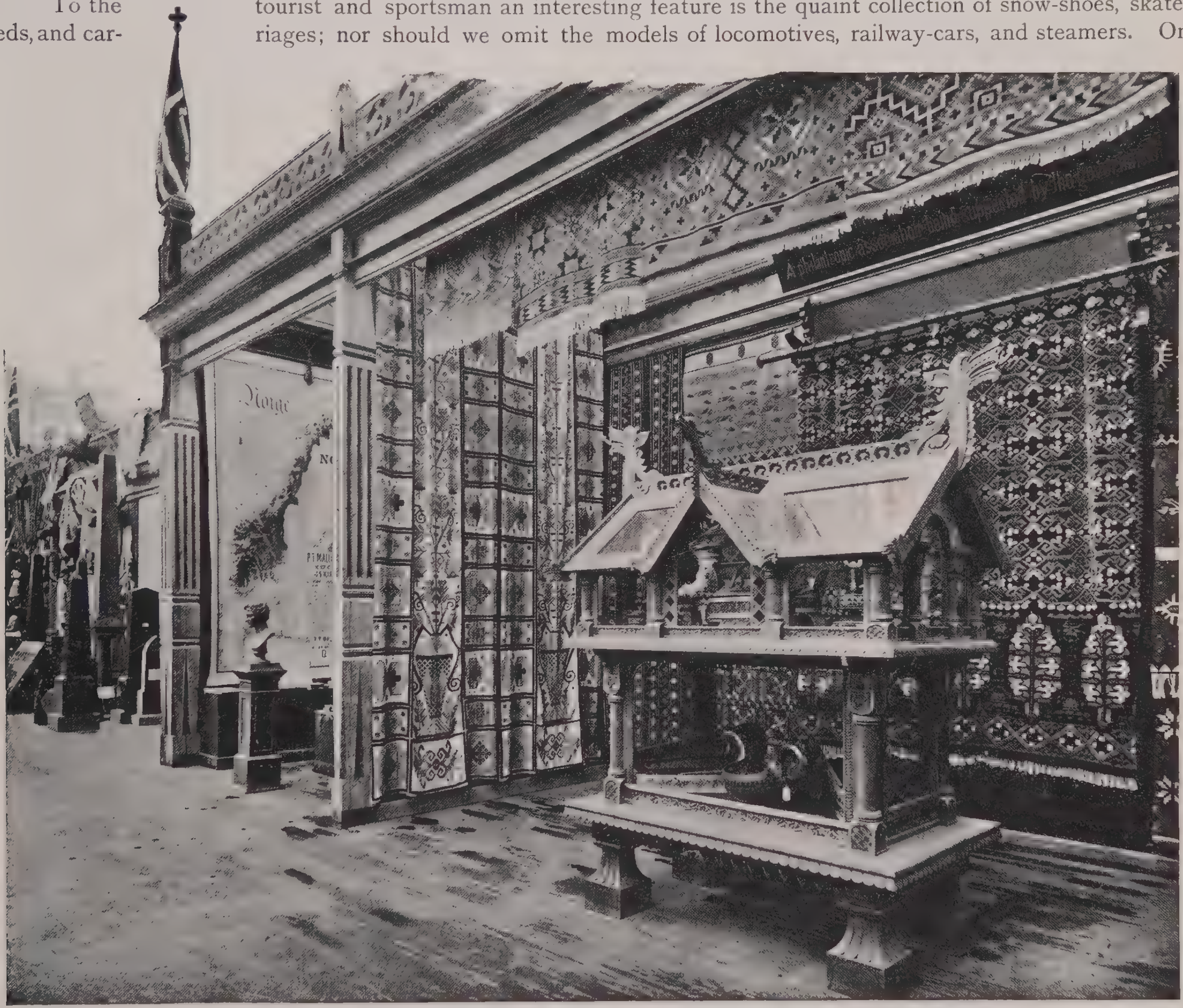
CORNER NORWAY SECTION

NORWAY SECTION

wood. With the exception of a few designs in simple colors at the main entrance, the pavilion is untouched by paint or oil, and though somewhat overshadowed by the loftier structure of Russia, shows to excellent advantage the natural beauties of Norway pine.

An attractive feature is the collection of Norwegian birds and beasts, including stuffed water-fowl, polar bears and deer, mounted on stands, in cases, or suspended from the walls. Norwegian granites and marbles are displayed in the form of polished columns, fireplaces, slabs for wainscoting, paper weights, and smaller articles. In the centre of the court is a tall monument, each panel representing a different variety of marble, the quarrying of which is a comparatively new industry in Norway. At the back of the pavilion is an exhibit of a national character, prepared by the Norwegian Home Industrial society, and by several private firms which make and export the costumes characteristic of the country. Here may be seen, attired in their usual garb, the Norwegian wife and maid, the peasant and hunter, with birds and animals on every side, and with large photographs scattered throughout the apartment, adding to the realism of the display.

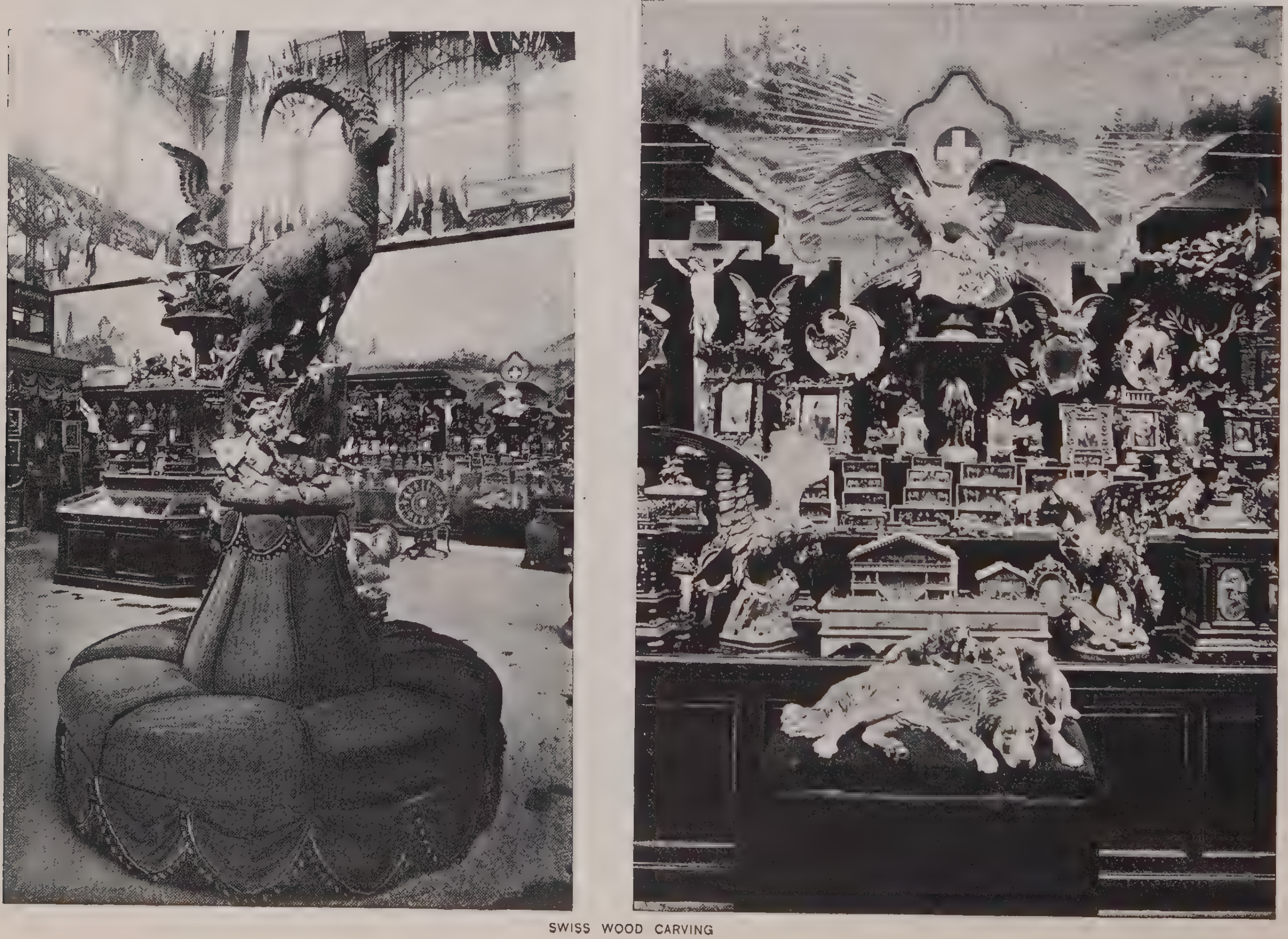
To the tourist and sportsman an interesting feature is the quaint collection of snow-shoes, skates, sleds, and carriages; nor should we omit the models of locomotives, railway-cars, and steamers. One of the railway-cars is so constructed that its wheels are adjustable to tracks of various widths. There are also models of the tourist steamers *Venus* and *Mercury*, which travellers in picturesque Norway will doubtless recognize. The snow-shoes are of all patterns, from simple strips of wood with a strap in the centre, to such as are delicately inlaid with mother of pearl, while the skates vary in style from wooden articles with heavy steel runners which turn up at the toe to those of modern make, fashioned of aluminum, and with the lightest of blades.



NORWEGIAN CARVED WORK

The industrial products of the peasantry are illustrated by choice specimens of embroidery and needlework, and by ingenious wood-carvings in the form of boxes, card-receivers, photograph-cases, paper-knives, spoons, and tankards for wine and beer. Elsewhere in the exhibits of wood and metal work the convivial habits of the Vikings and their descendants are brought into prominent notice. Among them are ancient wine-horns, ornamented with silver, which, on festive occasions, the guests were expected to empty a prodigious number of times. Native smiths have also reproduced in silver the massive cups of earlier days, while among originals is a tankard of 1683, and a wine-cup of 1790. Another relic, more admired than any is a crown of silver, made in the

SWISS MUSIC BOXES



SWISS WOOD CARVING

THE PANTHER HUNTER

seventeenth century, and worn by the brides of several generations descended from a prosperous peasant's family. A dozen Norwegian manufacturers send their contributions of antique Scandinavian silver-ware and ornaments, filigree and enamel work, the exhibits of gold and silver-ware, jewelry, and other articles of personal decoration, forming one of the strongest features in the Norwegian section.

On the other side of Columbia avenue are the Danish and Swiss pavilions, of which the former is recognized by its lofty towers and its coats of arms. On either side of the main entrance are bronze statues of Thorwaldsen and Hans Christian Andersen, near which are collections of personal relics commemorative of their national characters. In fact, the room is substantially reproduced in which the charming writer of fairy and other tales lived and labored for so many years. His writing desk, inkstand, pens, fire screen made of newspaper clippings, clock, spectacles, pictures, sofa, and several original manuscripts are placed as he loved to see them when in the flesh, bringing his personality home to us as never before. The entire collection was loaned by the royal museum of Copenhagen, which also permits the visitor to linger over many curios illustrating the career of the great sculptor. He it was who built the museum itself, which is here reproduced in miniature, together with most of his works of art which grace it. Side by side with the model is a case containing the hat which he wore at his triumphal entry into Copenhagen in 1838, together with the medal of the order of knighthood conferred by the king, his favorite pipe, cigar cases, match boxes, autograph letters, and sculptor's tools.

The Erikson room, dedicated to the memory of the bold voyager for whom has been claimed the discovery of America, contains rude sketches believed to refer to these pre-Columbian voyages. Its furniture is a reproduction of that which is used in Iceland at the present time. Upon the outer walls of the pavilion are also pictures illustrating those stirring times in the northern seas, one of them representing a Danish fleet crossing the North sea in 860, another some primitive craft touching in 980 at a foreign shore, perhaps that of Rhode Island or Massachusetts.

The main exhibits are divided into four classes, and passing through the chief entrance, we come first to the rich display of gold and silver, introduced by the equestrian statue of King Christian, mounted on the charger which for many years he rode on public occasions in Copenhagen. It is made of silver, the work being modelled from a photograph by Heinrich Hansen. Rosenberg castle, the King's summer residence, built early in the seventeenth century, is shown in a model of gold and silver consisting of 1,700 separate pieces. The principal manufacturers of gold and silver-ware also make creditable displays of ancient work, either as originals or imitations.

Prominent among the ceramic wares are those of the royal porcelain factory of Copenhagen, occupying the centre of the pavilion. Among its exhibits is a service, in rococo style, each of its pieces with landscape decorations by a Danish artist, and representing in all the labor of many years. Of works of art in underglaze there are not a few by prominent members of the royal academy.

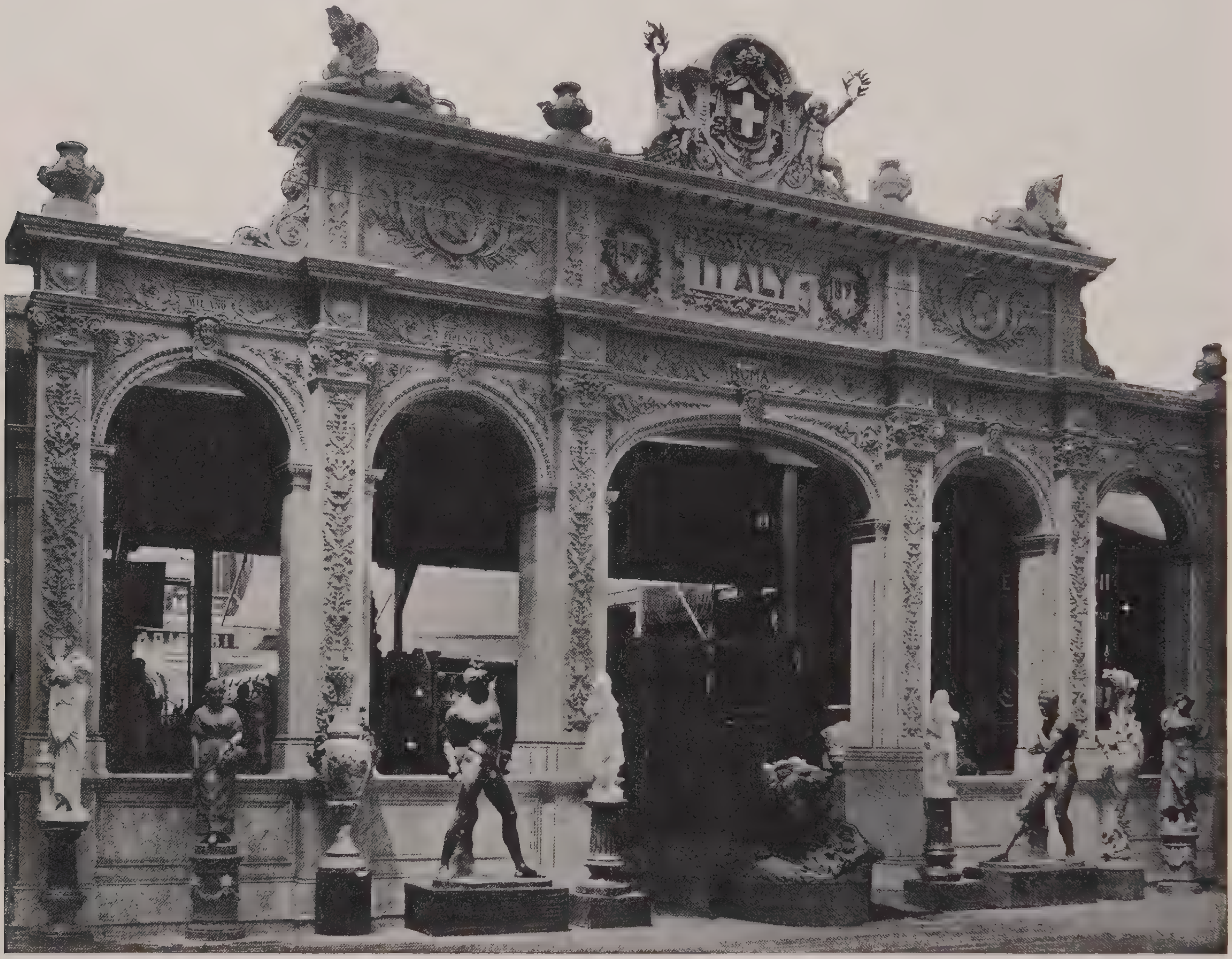
Elsewhere in the Danish pavilion are figures and vases in terra cotta, with furniture of oak and walnut, wall-hangings in silk and figured leather. Dainty embroideries, laces, and articles of domestic decoration represent the women of Denmark, and the exhibition of the Danish Sloyd association illustrates the system of manual training in the form of an industrial school, with specimens of printing and bookbinding presented by leading publishers.

HANS ANDERSEN'S ROOM

HANS CHRISTIAN ANDERSEN

Entering the dark colored Swiss pavilion, beneath the arch which bears the national cross of red, the visitor finds himself surrounded by colored crayon pictures of the castle of Chillon, Jungfrau, Mont Blanc, Geneva, Lucerne, the Bernese Alps, and other romantic scenery, which serves for a time to draw his attention from the lower planes of industries. Soon, however, he observes that watches and watch-making occupy much of the space, Geneva, of course, making the strongest exhibit. Several of the firms not only display time-pieces, but every portion of their mechanism, an entire family of watch-makers showing how the different parts of the watch are distributed among the cottagers to be finally put together at the factory.

Wood carving is also one of the most prominent industries of Switzerland, where the gables of their houses, the framework of their doors and windows, and the interiors of their residences are rich with sculptured ornamentations. The natural taste and skill in this direction, developed by centuries of practice and by the efforts of industrial societies, is now the source of a good revenue, many large firms exporting such articles of virtu to European and foreign lands. Forty of these houses make exhibitions in the Swiss section, and about twice that number of watch-makers and manufacturers of scientific instruments and music-boxes.



EXTERIOR ITALIAN PAVILION

At the main entrance of the Italian pavilion, with its dress of cream and gold, is a bronze statue of a lion and his prey, flanked by the famous group of "The Wrestlers," and near by a figure of Augustus Cæsar, and tile paintings by Achille Mollica. Throughout this section statuary is scattered in lavish profusion, and the life-like beauty of the creations in pure marble is further enhanced by the hangings of heavy velvet which form the chief accessories to the exhibits themselves. Among them is a Psyche from the studio of Rossa; and images of Rebecca, Esther, and Margherita by one of the few real artists who are also dealers in works of art. Columbus, bent and feeble, is taking his last view of land, and in a somewhat daring combination of marble and bronze is the figure of a female slave, the head, arms, and feet of metal, and the drapery of two varieties of marble so artistically blended that they appear to be cut from a single block. Worthy of note also are those which depict the eager fresh delight of a group of children, for the first time absorbed in the marvels of the stage, in contrast with which are the figures of a little girl, first with a live bird in her hand and then with its dead body, the face and attitude symbolic of joy and sorrow.

ITALY

In the northern portion of the pavilion are the wooden carvings, not a few of them second only to those in marble. On a large panel of Italian walnut, for instance, are groups of cupids, flowers, and birds of most artistic execution. The famous iron doors of San Marco are reproduced in miniature, and as specimens of furniture carvings are massive and handsomely decorated sideboards, cabinets, settees and mantels. Among others worthy of note are the decorative carvings and figure delineations of Francesco Toso, of Venice, whose death occurred in Chicago while earnestly striving to make the entire exhibit worthy of Italian art and workmanship. Toso was partial to dark-hued woods, and his negroes in ebony will not be soon forgotten; neither will his cupids, having as background garlands of flowers. His masterpiece, however, consists of the figures of Marguerite and Mephistopheles, carved from opposite sides of the same block of wood, their life-like forms reflected in a mirror, so that they seem to be walking together. Other carvings from wood are in the shape of guitar players, gondoliers, punchinellos, etc., illustrative of the gay and grotesque. Still another group represents a score of old-time Italian servants, and there are several specimens in which the wood is so stained as to resemble bronze.

MARBLE, ITALY

Glass-ware, ceramics, mosaics, inlaid work, and cameos are represented in forms for which Italy has ever been famous. The majolica ware of Naples, the Byzantine mosaics, the Venetian glass, and furniture of all designs inlaid with ivory, are liberally displayed. Of choicest texture and tracery are the Venetian laces, the manufacture of which, under the patronage of the queen, has within recent years, revived a long dormant industry. In the case which contains the cameos is a shell with over fifty figures carved upon it, among them members of the royal family of England. Coral jewelry, embossed leather work, carvings in tortoise shell, and bronzes reproducing many famous pieces of statuary, with replicas of Pompeiian utensils and ornaments, are among the attractions over which the fair pilgrim is apt to linger.

ITALY

Adjacent to the Italian division, and in the southwestern corner of the Manufactures building, are the sections allotted to Spain and certain of her old-time dependencies. The Spanish pavilion, with its gloomy arches, its massive pillars, its pink ceilings and richly fretted ornamentations, is an impressive structure, reproducing some of the more salient features of the cathedral of Cordova. A collection of religious images, tall candelabra and embroidered tapestries in which are recognized the features of the pope and the queen-regent of Spain, further tend to create an atmosphere of church and state. At one of the entrances is a court inclosed with rich specimens of stained glass and mosaics, with a back-ground of gilded moldings.

Barcelona plays an important part with her exhibits of glass and mosaic work, of rugs and blankets, and other manufactured products of that historic city, still one of the industrial centres of Spain, especially in the production of textile fabrics. Here was held in 1892 an exposition of industrial arts, designed principally to illustrate the technical skill of Spanish working-men, and the best of the exhibits there collected were forwarded to the World's Fair, forming the bulk of the display in the Spanish section. There are silks of antique pattern, swords, ceramic wares and tiles, carvings in metal, chemicals, soaps, cordage, and a small collection of Spanish books. One of the most monumental works contributed by the editors and publishers of Spain is the Spanish and South-American directory. There are also some unique bindings in leather, metal, and wood. Of special interest to women are the point d' Alençon, Chantilly and other laces, and the photograph of the infanta Eulalia, taken in Barcelona many years ago.

The small area originally granted to Portugal was transferred to Italy; but in the exhibits of her former New World empire of Brazil, as also in those of the Argentine republic, a portion of the ancient Spanish vice-royalty of Buenos Ayres, we have sufficient evidence that primitive systems of

ITALIAN FURNITURE

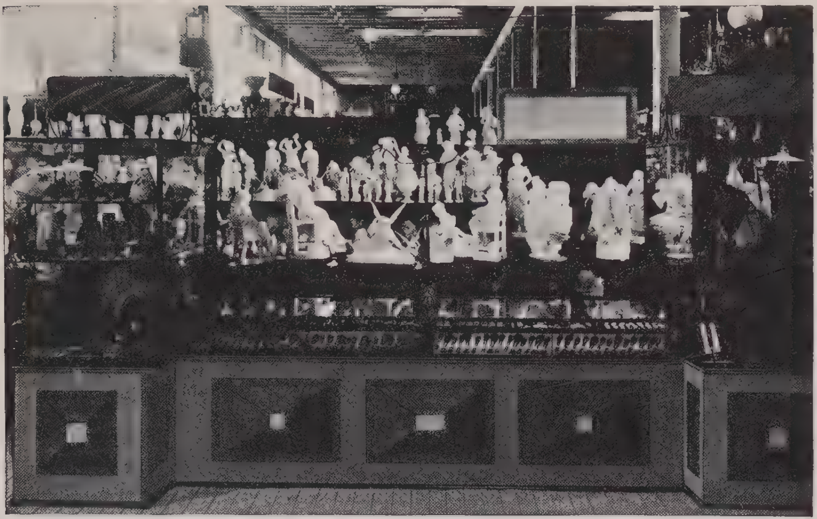
BRONZES, ITALY

manufacture are being rapidly superseded by modern methods and machinery.

In connection with the Brazilian section, it may here be mentioned that her appropriation of $600,000 exceeded, with one or two exceptions, that of any European power, and that this amount has been well expended is nowhere more apparent than in her department of manufactures. Here in truth is one of the surprises in which the Exposition abounds; for by many, even of the more cultured class of visitors, men well informed as to the agricultural and mineral wealth of the young republic, little was expected in this direction except for a slender display of textile fabrics, the fashioning of basket work and of household utensils from clay and cocoa-nut shells, with preparations of tapioca, manioc, chocolate, dye-stuffs, and india-rubber, with perhaps a few hammocks of fine material and workmanship; for to Brazilian Indians is attributed by some the invention of these articles of modern comfort. But entering this section, the first thing noticed is a choice collection of ceramics, mosaics and wall-papers from Rio Janeiro, and the states of St Paulo and Bahia, with saddles richly embroidered in gold and velvet, with inlaid wood-work, and massive ebony furniture. The Columbian era is illustrated in the ethnological division; the nineteenth-century era in the manufactures division. Government is represented by the guns and models of cannon sent from the naval arsenal at Pernambuco, and by the uniformed dummies of officers, musicians, and privates.

ITALIAN DECORATIONS

ITALIAN CHINA



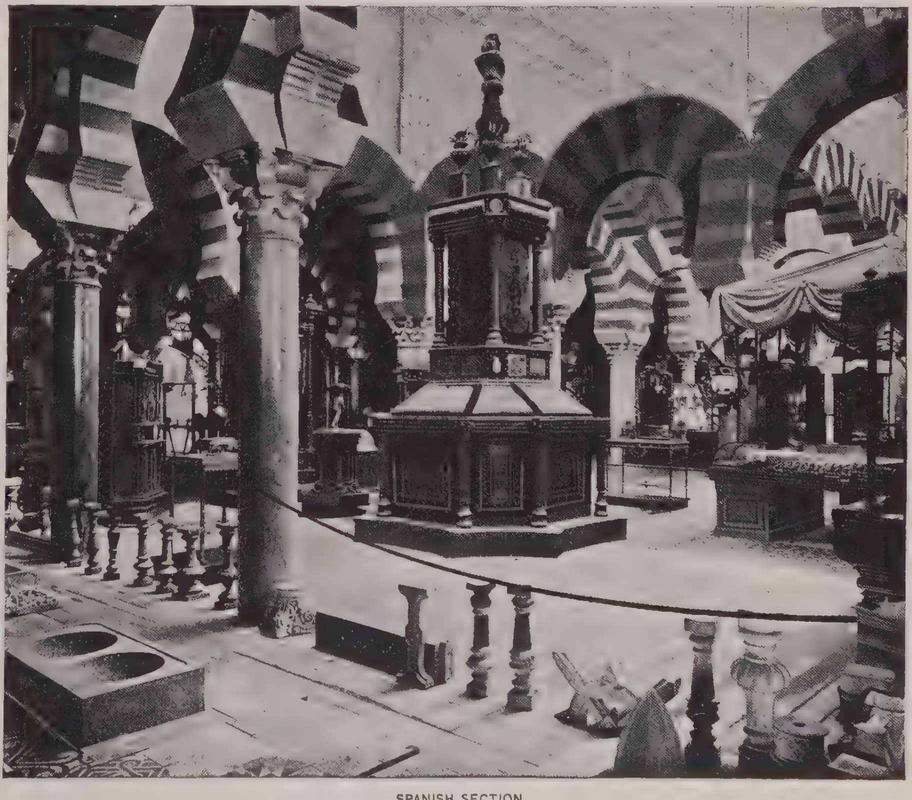
ITALIAN STATUARY

The display of the Argentine republic serves also to counteract the prevailing idea that for the most part it is a country of pampas Indians, who scour the plains in search of cattle and ostriches, ever on the look-out for scattered settlements and wandering settlers. True, in her fine art gallery, installed in this section, is a painting which represent a foray of savages upon a defenseless village; but such scenes are merely incidental, as are those in which the leading rôles are played by gauchos or half-breeds of Spanish and Indian blood, who tend cattle, capture wild horses, protect the frontiers, and wage constant war against the savages of the pampas.

But although long Indian spears and bolas or lassos with iron balls at the ends play a small part in the Argentine exhibits, they are merely accessories to the real display of modern industrial life. All the world knows that the republic stands well in primary manufactures of leather, hair, wool, and meats; but here are also paintings of no small merit, with mosaics, bronze figures, delicate wines, liqueurs, chemicals, perfumes, billiard tables, and other articles which show that the Argentinians are not merely an agricultural and pastoral nation. A form of industry, which is neatly represented and is quietly developing into considerable importance is the manufacture of oils from pea-nuts, grapes, and flaxseed, the last in the form of what is commonly known as linseed oil. The country is well adapted to the raising of grapes and barley, and the influence of the Italian, French, Spanish, English, and German elements is seen in the rapidly increasing production of wine and beer, as is fully illustrated in these exhibits. Concentrating her exhibits in this section, the republic also presents specimens of government printing in the way of bank notes and postage stamps, a large frame near by containing the title pages of various literary and musical works issued by publishing houses within recent years. Here also are cases filled with the fancy work made by orphans under the care of the state and the religious orders.

INDIA CARVED FURNITURE AND VASES

In Mexico's division is fairly represented her industrial progress within recent years, now that the successive administrations of President Diaz have put an end to revolutions, or predatory raids in guise of revolution, which followed the acquisition of independence. Her section is enclosed by a glass partition, on one side of which are specimens of wood carving from old Spanish churches, most of them representing sixteenth century art. On the opposite side are several pieces of primitive artillery, such as were used in the days of Cortés, side by side with models of some of the last pieces of ordnance cast at the national foundry, and among other historic articles near by is one of the swords of Cortés. In a small picture gallery are portraits representing the military and civic leaders to whom the republic has accorded places of honor.



SPANISH SECTION

ARGENTINE REPUBLIC EXHIBIT

The display of manufactures consists mainly of pottery, bronze, onyx, artificial flowers, and textile wares, including, among others, cordage and hammocks fashioned, of heniquen fibre, the sisal of modern commerce. Specimens of bronze work and cotton goods of native manufacture represent two of the new industries of the southern portion of the republic. The clay pottery and the artificial flowers are largely the handiwork of the Mexican Indian, who is a deft, though untrained modeller, and possesses in an eminent degree the faculty of imitation. So also with the groups of onyx, whether in slabs or fashioned into such articles as scarf and shawl-pins, watch-charms, paper-weights, and plaques for the decoration of walls, on the last of which are painted figures typical of Mexican life. Of embroideries, laces, and other delicate fabrics there is a collection which will not suffer by comparison with those of European make.

Somewhat in contrast are the exhibits of Turkey and Bulgaria, the former consisting of a single display of oriental rugs, while the latter has furnished well selected specimens, not only of her manufactures, but of her

MEXICAN EXHIBIT

PRESIDENT DIAZ

agriculture and her national costumes, those of the peasantry in their gay attire, and those of her soldiery and civic officials. Of wheat in the sheaf and in the kernel, of barley, sesame, and other food-plants there are many fine samples in her neat pavilion. Here also are attar of roses, wines, tobacco, silk, and hand-made textiles, including an embroidered carpet with 500 square feet in area, and in a single piece, while finely wrought harness and wood carvings, with the tall candles made for cathedrals and religious ceremonials, and a hundred other articles illustrate some form of industry or national life.

TABLE, MEXICO

South of the Ceylonese section is the toy-like pavilion of Corea, for even the so-called hermit kingdom, though yet secluding herself from the influences of western civilization, has sent commissioners and an exhibit to the World's Fair. Of these commissioners in their flowing silken robes and tall Corean hats, one is the minister to the United States, resident in Washington, and another the secretary of the American legation at Scoul or Seyool, the capital of the kingdom. It was to the latter that the king intrusted the twenty-five or more tons of exhibits, most of them taken from the royal palace, which illustrate the customs and industries of this strange and isolated nation, whose monarch, ministers, and people have probably more confidence in the United States than they have in any of the foreign powers. The collection includes a variety of silken garments especially made for the queen's ladies, and embroidered screens, mats and hangings give the visitor an idea of the interior decoration of the palace. A sedan chair, such as is used by the nobles, is not unlike some of those in the Midway plaisance, but provided with a wheel about four feet in diameter, over which is the seat. Except on level ground, however, the chair is borne on the shoulders of servants, six at each end. There are also specimens of the paper manufactured by the Coreans, varying in grade from the tough substance used to carpet floors and roof houses to that which is as fine and glossy as silk. The Coreans are extremely jealous as to the secret processes by which they produce these fabrics. They claim, moreover, to have taught the Japanese what they know of the manufacture of pottery, or rather that their southern neighbors have forcibly carried away their artisans and their secrets. Among the most interesting of the curios are specimens of the ancient pottery, known as Satsuma ware, the manufacture of which is now a lost art. The pieces still possessed by the nation are priceless treasures, kept as heirlooms from one generation to another. A bowl, belonging to the king, and more than 500 years old, is of a greenish color, delicate texture, and richly polished and decorated on the outside. Corea also presents an exhibit of her medicines, and is especially proud of the ginseng root, said to be worth almost its weight in gold, and especially esteemed by the Chinese as a curative for disorders arising from the use of polluted water. The curing of tiger skins in which the natives are experts, also forms a considerable source of industrial revenue. Of minerals and metals there is a large collection, and among miscellaneous articles are carpenters' tools, cabinets, lacquer-work, tobacco-boxes, vessels of brass and pottery, grains, nuts, seeds, kite-reels, chess-boards, candle-sticks, hairpins, and entire suits of clothing for men and women, showing the national dress of the common people, and of those of high degree. An interesting feature is a group of brass cannon made in the tenth century, about the size of a small howitzer, but with barrels wrought in modern style.

INDIA CARVED SIDEBOARD

Between the Argentinian and Mexican exhibits is the richly carved, gilded, and colored pavilion in which were housed, at the Paris Exposition of 1889 the exhibits of Siam, and reproducing the garden house of the Siamese king. Although only twenty-six feet square, it is one of the most unique and attractive structures in the

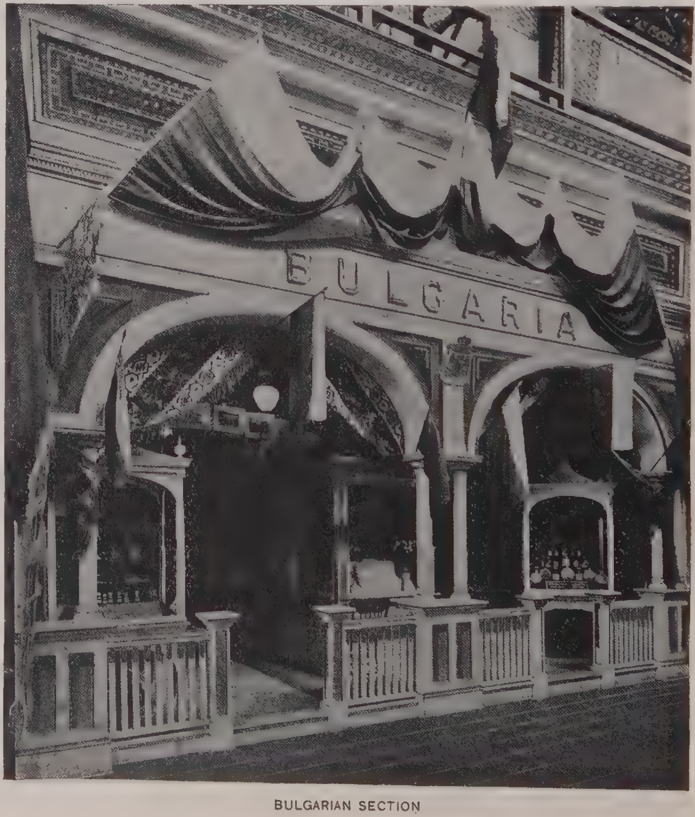
OTTOMAN EMPIRE EXHIBIT

Manufactures hall. The floor is considerably elevated above the dais upon which it stands, is approached by two ornate stairways, and open on all sides, its sharp gables and slender pillars, being painted red and yellow, and decorated with pieces of glass and broken pottery. As remarked by a spectator, the structure resembles nothing so much as a large piece of jewelry, one of the settings of which is a pair of elephant's tusks, flanking one of the entrances, and curving gracefully from the floor to the sides of the pavilion for a distance of nine and a half feet. These were taken from a domesticated animal, and are among the largest in the world. Here also is a display of gongs, drums, guitars, violins, chimes of bells, harmonicas, and zithers, with models of Siamese houses, carved from wood beneath the projecting eaves, these, with the models of native boats, suggesting the city of Bangkok with her cumbersome river craft, and the half nautical life of her common people, for among the Siamese as with the Chinese, there are many families who live entirely in boats. Within and without the pavilion, are depictured in photographs the royal family with scenes characteristic of Bangkok.

A remarkable piece of workmanship is a series of figures representing Buddha in different attitudes, all carved from solid tusks of ivory, and framed in an intricate floral design. That the stories told of the rich deposits of gems on the banks of the rivers and streams of Siam are not unfounded may be inferred from the collection of rings, bracelets, toilet-sets, and trays, the framework of which is gold, and the decorations diamonds, sapphires, garnets, amethysts, emeralds, and rubies. Of articles made of the precious metals none are more elaborate or richly wrought than rice and betel-nut dishes for domestic use, and the bowls which the Siamese present to their priests as propitiatory offerings. From northern Siam are bowls of delicate workmanship, engraved with the figures of animals, from which are named the Siamese cycles, each of a dozen years. Among the wealth of illustrative material may also be mentioned mattings, screens, priestly fans, made of the leaves of the sacred poh tree, rich embroideries, silks and satins, sets of Siamese money, beautiful caskets of filigree and mother of pearl, samples of chipped meats such as are eaten by the royal family, and plain specimens of native cloths, with models of looms and spindles. Finally, there are skins of the tiger, leopard, deer, buffalo, otter, armadillo, python, rabbit, rhinoceros, and other animals illustrating the fauna of Siam.

Persian industries and Persian life are seen to better advantage in the Midway plaisance than in the small oriental pavilion adjacent to the Spanish section. Here, however, is a collection of native rugs and carpets such as was never seen before outside of Persia. For one of pure silk, with fifty-six square feet of surface, maroon and dark blue in color, and richly embroidered with flowers and figures of birds, $15,000 is the price demanded. A Bokhara rug, with rich Oriental red ground, an India Cashmere rug, in green and red, with light-colored carpets of mixed Angora wool and silk, and a Samarcand carpet from Central Asia, are a few of the fabrics which cover the floor and walls of the Persian pavilion.

In the southeastern corner of the Manufactures hall is the Chinese exhibit, consisting of ivory carvings, silk fabrics, embroideries, porcelain ware, bamboo screens and fans, mattings, fire crackers

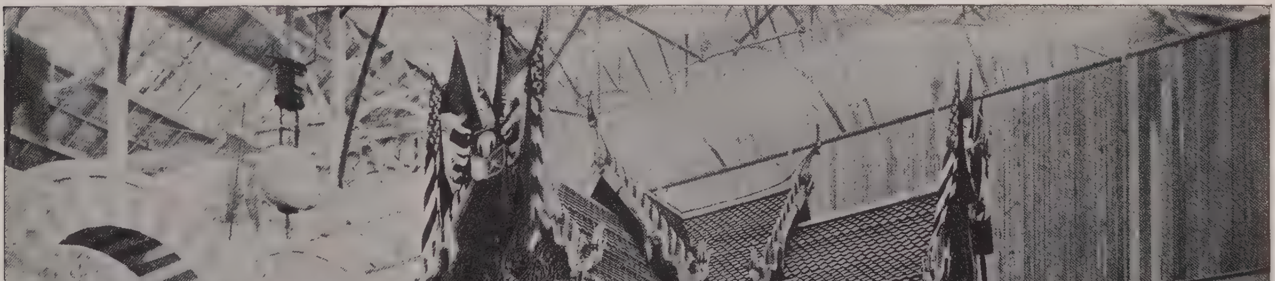


BULGARIAN SECTION

COREA EXHIBIT

and other miscellaneous articles. On account of the partial rupture of friendly relations with the United States caused by the exclusion act, China has sent us, not a representative national display, but rather one gathered together by a few wealthy Chinese who have business interests in this country. In the booth of a Canton merchant its wooden enclosure is decorated in the fashion peculiar to the Chinese, and fastened to it are tiny carvings of joss-houses, pagodas, dwellings, and shops, from the windows and doors of which protrude the most grotesque of figures. Gold, red, and green are the most prominent of the decorative colors. Within are some wonderful carvings in ivory and sandal wood, beautiful silk embroideries for screens and dresses, ebony furniture gilded or inlaid, ebony or ivory boxes, and richly enamelled vases, one of the last made for the emperor Ching Tai, of the Ming dynasty, about four centuries ago. Side by side with a portrait of the merchant, is that of Lee Hung Chang, viceroy and statesman. In adjoining booths two other merchants display their specialties in ceramic wares and mattings.

Of the $630,000 appropriated by the Japanese government, a considerable portion was expended on her exhibits in the hall of Manufactures, adjacent to the Austrian section; and here is sufficient evidence of the growing commercial intercourse between that country and the United States. Already the trade between the two countries exceeds forty-four millions a year in Mexican silver dollars, of which the exports from Japan



SIAM PAVILION

constitute over three-fourths; more than a quarter of her foreign, and nearly half of her total export trade, being with the United States. Among the main articles of export are porcelains, textile fabrics, metal, and lacquered wares, all of which are liberally represented at the Fair. The display is, however, less unique than at the Centennial Exposition, when for the first time was presented a complete collection of the native manufactures of Japan. Then it was that a great demand was originated for Japanese articles, especially in the way of ornamentations, one that even now is observable in many American branches of artistic manufacture. As a result, the simple characteristics of earlier Japanese work have become somewhat vulgarized; for the restless commercial spirit has seized upon Japanese and American alike, and lowered the former standard. Nevertheless there are many specimens representing the purest results of Japanese handicraft, so that the visitor may judge for himself as to the genuineness of what they have been taught to believe were true samples of Japanese skill and taste.

Among the best are the porcelains, of which a number of manufacturers have contributed beautiful specimens, some avowed imitations of the Chinese school, but, as is claimed, not fashioned merely from commercial considerations. Besides dishes, vases, and other articles, such as are usually composed of this material, there are busts and figures of Kaga porcelain, neatly molded and skilfully painted. The portrayal of figures in porcelain is something new to Japanese art, and a feature of additional interest is that the pieces represent with considerable fidelity of delineation, such personages as Columbus, Washington, Lincoln, and Grant. By a secret process the gold and colors used are so absorbed as to be virtually embodied in the work.

Another variety is the cloisonne ware with its metallic enamelling, of which there are two vases more than eight feet high, and among the finest examples of Japanese art. The process of manufacture requires no little patience and skill, for the enamelling often requires several applications, and the pieces are thoroughly polished after each firing. Upon these vases are elaborate designs representing the four seasons, and such political events as the threatened annexation of Corea by China or Russia. Flowers, birds, snow scenes, eagles and domestic fowl, are interwoven in intricate fashion, while the crysanthemum and kiri blossoms, national symbols of Japan, appear between the rising sun and the American flag, indicative of the cordial relations existing between the two nations. On the stand of keyaki wood, on which they are mounted, are reproduced in carvings seventy distinct varieties of flowering plants.

JAPANESE VASES

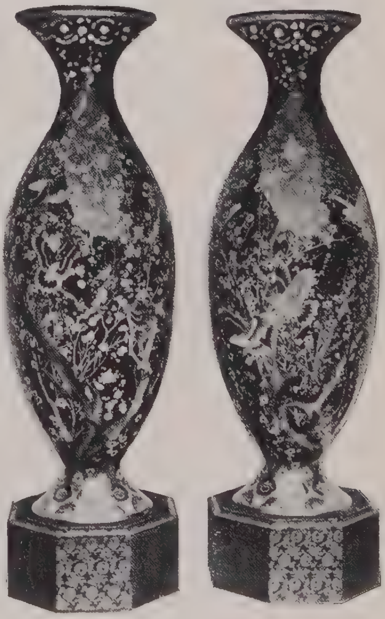
Mounted on a pedestal at the northern end of the section is a marvel of imitative workmanship in the form of an iron eagle, two feet in height and five between the tips of the wings, each feather, of which there are several thousands, being separately traced, and containing as many as a thousand lines. Here was a five years' continuous task, and in order to make a perfect model, the artist secured two eagles, one of which he stuffed, keeping the other alive that he might watch its movements. Among the carvings in bronze, the most noticeable are those which show the native falcon in a dozen lifelike forms, and suggest the sport derived by the ancient daimyos of Japan. Of carvings in wood, there are many specimens, one of the most striking of which is a model of the famous pagoda at Kioto, known as Yasaka, and destroyed by fire many years ago. The original was a piece of hand carving in wood, as is the model, the latter requiring the services of thirty-seven skilled workmen for an entire year.

Most of the articles in wood and ivory carvings are of ingenious design, in striking contrast, as are the ceramic wares and mosaics, with the crudity of much of the workmanship now palmed upon the public as of Japanese production. An attempt to check this imposition has been made by the government art school in Tokio, from which many delicate carvings have been sent to the Fair. In the line of decorative metal work, also, the government illustrates the skill of native artificers with specimens of artistic handicraft from leaders in that specialty. There is, for example, a rich piece of chisel work in the form of a plaque, made of a mixture of gold, silver, iron, and copper, upon which figures are engraved representing a flock of herons, with effects of light and shade unknown to western artists. As a rule, Tokio furnishes the best of artists and artisans, which, by the way, in Japan and the east, are much more nearly synonymous terms than in the United States. Lacquered wares are seen in quaint and beautiful forms, and there are gold boxes covered with wrought flowers and butterflies, writing-cases covered with marine views, toilet sets, fans, tables, and an endless variety of useful and ornamental articles in such profusion as to forbid a description in detail.

JAPANESE BRONZES

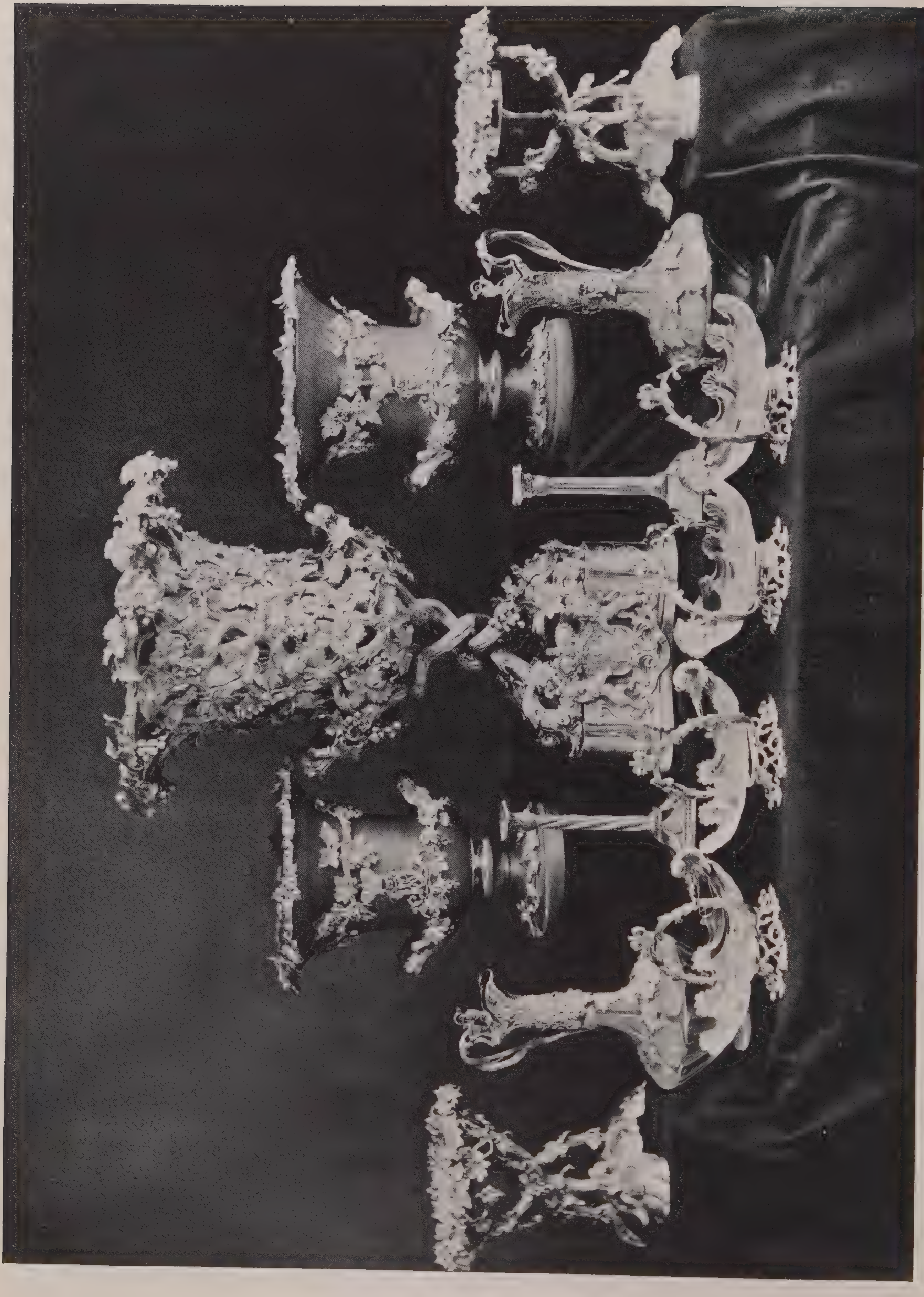
JAPANESE VASES

Of silks, embroideries, tapestries and ornamental needle-work there is a choice display, and especially is this exhibit an illustration of the facility with which the Japanese adopt the best features of the products of other nations. Many years ago, one of the most skilful weavers in Japan was so impressed with the beauties of the French Gobelin tapestries that he commenced to copy them for the benefit of his countrymen. Competent judges of his work, as seen at the Fair, now assert that the texture of these tapestries is finer and more durable than that of the true Gobelin, while there are depicted scenes from national life with an accuracy of detail beyond the best efforts of western masters. The principal work represents one of the religious celebrations held annually at Nikko; a temple with surrounding structures and foliage, and a procession of some 1,500 figures, the entire scene, as to architecture, costume, perspective, and atmospheric effects, as clearly presented as though depicted on canvas. Upon rich velvets are also views of the eastern empire, interior sections of Japanese houses, and other specimens of art in which the work of the dyer, the artist, and the manufacturer seem merged in one. In embroideries and pieces of pictorial needle-work many are almost as ambitious, but, although the results are usually more gorgeous than in the products of the loom, they fall short of them in artistic qualities.


JAPANESE VASES

In the Japanese pavilion there are specimens of nearly every class of manufacture, from the art works which we have noticed to toys, walking sticks, paints, dyes, varnishes, drugs, and stationery. But the chief interest centres in the articles which tend to beautify the interior of homes, or to ornament their pleasure grounds. No feature in the exhibit attracts more attention than the model Japanese house, with its screens, its light and simple furniture, its silk drapings, lacquer and gilt ornaments, vases, and household implements and decorations. Here are real

JAPANESE SECTION



A COLLECTION OF BRITISH SILVER WARE

JAPANESE CHINA

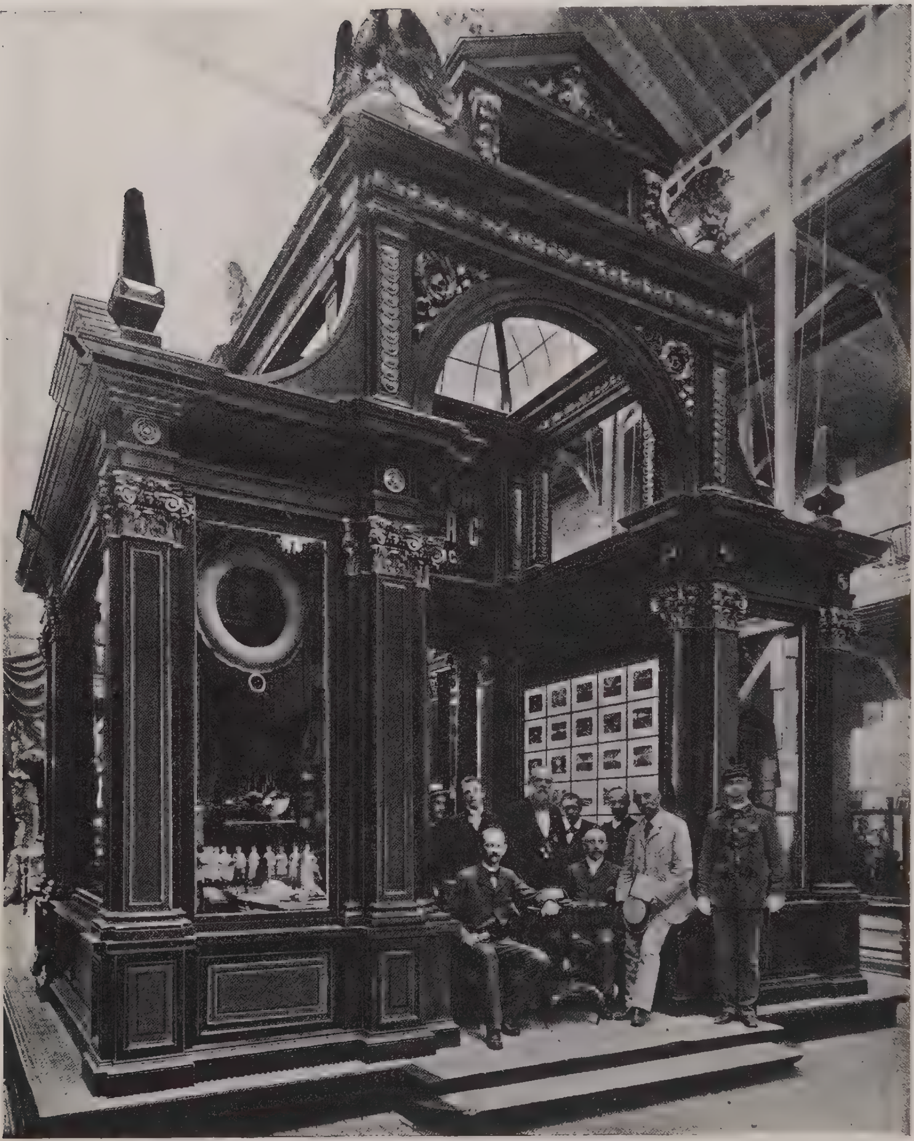
Japanese apartments furnished by the most competent of native artists, so that those who would see for themselves the homes of the wealthier Japanese can find no better opportunity than is here afforded them.

In addition to the home and foreign manufactures already described are certain collections classed under that department, but housed in separate buildings, either through lack of space or for other reasons that need not here be mentioned. These are the Shoe and Leather, the Merchant Tailors', and the Krupp exhibits. The Shoe and Leather building is a plain, substantial, two-story structure, suggestive of an eastern factory, and as it would seem, somewhat out of place in its location by the lake front, near the convent of La Rabida. Of the $100,000 subscribed for the erection of this edifice and the organization of its exhibits, about sixty per cent was contributed by the New England states, largely by Massachusetts. Of the total exhibiting space, 15,000 square feet in the centre of the building were allotted to foreign participants, mainly to France and Russia, both of which nations have furnished an elaborate display. On the ground floor, in addition to foreign exhibits, are collections of leather and leathern goods. The galleries are filled with the best and most recent machinery, some of it in operation, for the manufacture of various grades of shoes; and there is a model factory in running order, with a capacity of a thousand pairs a day.

Among the more striking exhibits on the ground floor are the largest horse and alligator skins that have ever been tanned, each thirteen feet in length, and mounted with the head of the animal from which it was taken. California has a structure of walrus hide, inlaid with many varieties of leather; Mexico, a unique display of furs and skins, and the central figure of the Brazilian group is a mammoth globe, covered with samples of rough leather. There are calf skins almost as soft as silk, kangaroo skins, an elephant's hide with a surface of more than 300 square feet, and cases filled with chameleon, lizard, and anaconda skins from Latin America and Asia. On the walls are displayed the horns of animals which furnish the raw material of the leather industries; of stuffed specimens there are enough to stock a museum, and here and there are niches filled with such curios as a milk bag of goat-skin from Jerusalem, a water bag from Jaffa, and the head of an Amazonian Indian, with bones removed, leaving only the shrunken flesh and cuticle. But of the primary descriptions of leather, one of the finest specimens is in the form of a belt 200 feet long and twelve in width. In belting and sole leather, New York, Pennsylvania, California, and Ohio are especially prominent, the American Oak Leather company, of Cincinnati, furnishing a striking example of the uses to which the heavy grades may be put, in its pavilion of grained leather, closely resembling black oak and mahogany.

But foot-wear leads all the other classes, the factories of America competing with those of France in

BRONZE PAGODA

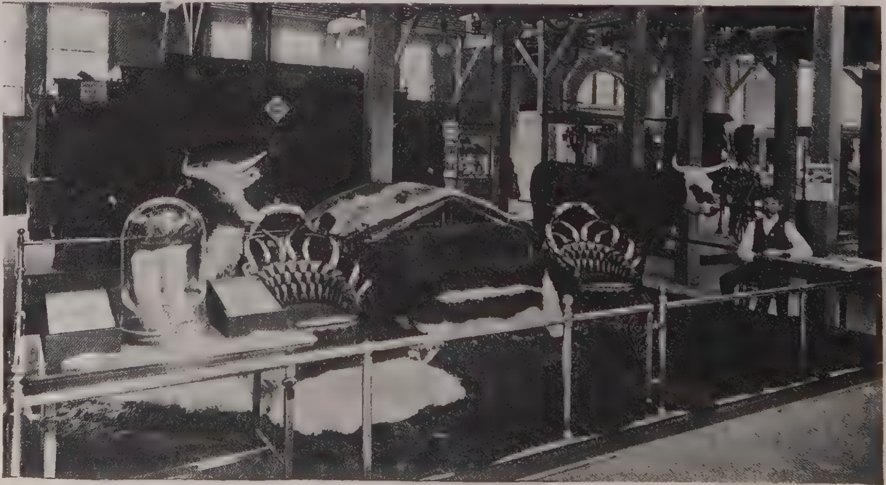


POSING FOR PHOTOGRAPH, SHOE AND LEATHER EXHIBIT

the finer grades. There are shoes made of alligator skin, of buffalo, and horse hide; there are heavy Russian boots, with wooden soles, and solid, spiked shoes from Switzerland; there are dainty kid shoes of many buttons, and satin slippers from Spain, with numberless varieties and grades from France and the United States. Of morocco and dongola goods France and Germany have each a choice collection, while the United States excels in patent and enamel shoes. On the walls are several hundred water colors, representing the various styles of foot-wear used by the leading races of the world for three or four thousand years, with cases filled with models adapted to all climes and nationalities. Among them are velvet-lined shoes for dainty Burmese ladies; shoes with turtles' claws protruding from the toes, such as are worn by the African savage; the huge wooden clogs that the Dutchman wears; pattens with stilts attached for Japanese tea pickers; embroidered shoes with toes upturned for the Chinaman and Corean, and shoes lined and tipped with fur for Swedes and Russians, the scented jeweled slipper of the harem favorite, and the sandal of the Egyptian water carrier; all these with foot-wear for every people under the sun, from the Eskimo to the Patagonian, and from the Laplander to the Persian.

In decorative leather work the Russian exhibits contain some remarkable specimens. Harness leather in black, buff, and russet colors, is shown in a variety of forms by most of the participating countries, and from Cape Town comes a collection of trappings used by the Boers, together with a number of leather ornaments culled from Zulu territory. There are Chinese swords, with carved or stamped leather hilts; Moorish scimetars and Soudanese swords and daggers decorated with leather; Zulu shields of rhinoceros hide, and leather war belts from Abyssinia studded with precious stones and scarred with the marks of battle.

South of the Illinois state building is a miniature reproduction of the Acropolis, with the orthodox porticos in front and rear, and with broad stair-ways leading to the water's edge. Approaching this classic structure, the visitor inquires as to its uses, expecting perhaps to find there a collection of works of art, and probably the



EXHIBIT, SHOE AND LEATHER BUILDING

MODEL OF FACTORY

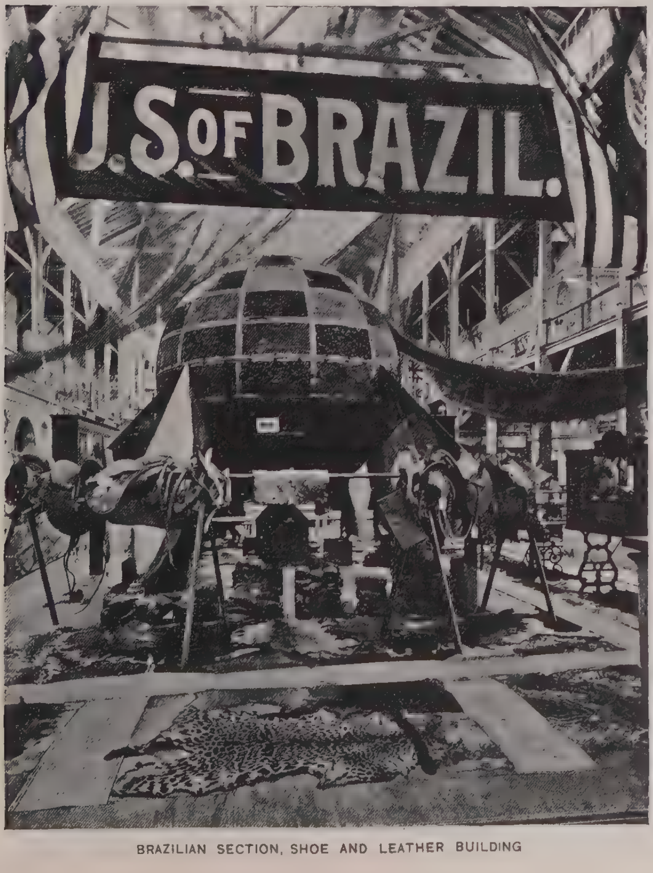
last that he thinks of is the purpose to which it is put, for here is the Exposition home of the merchant tailors of the United States. Entering this pavilion, of which the interior is finished in cream and gold, and with appropriate mural decorations, we read on the panels of the rotunda the following biblical inscriptions: "And they sewed fig leaves together, and made themselves aprons." "Unto Adam also and his wife did the Lord God make coats of skins, and clothed them."

On the dome above, supported by Corinthian pillars, are paintings representing the evolution of the tailor's art, beginning with Adam and Eve, in primitive attire, and then the barbarian, somewhat more advanced in costume, followed by the Egyptian, the Greek, the citizen of the renaissance period, and of the era of Louis XIV—XVI, and so on up to modern styles of dress. In one of the mural paintings is the scene in a tailor shop of by-gone days, so graphically depicted by Charles Durand.

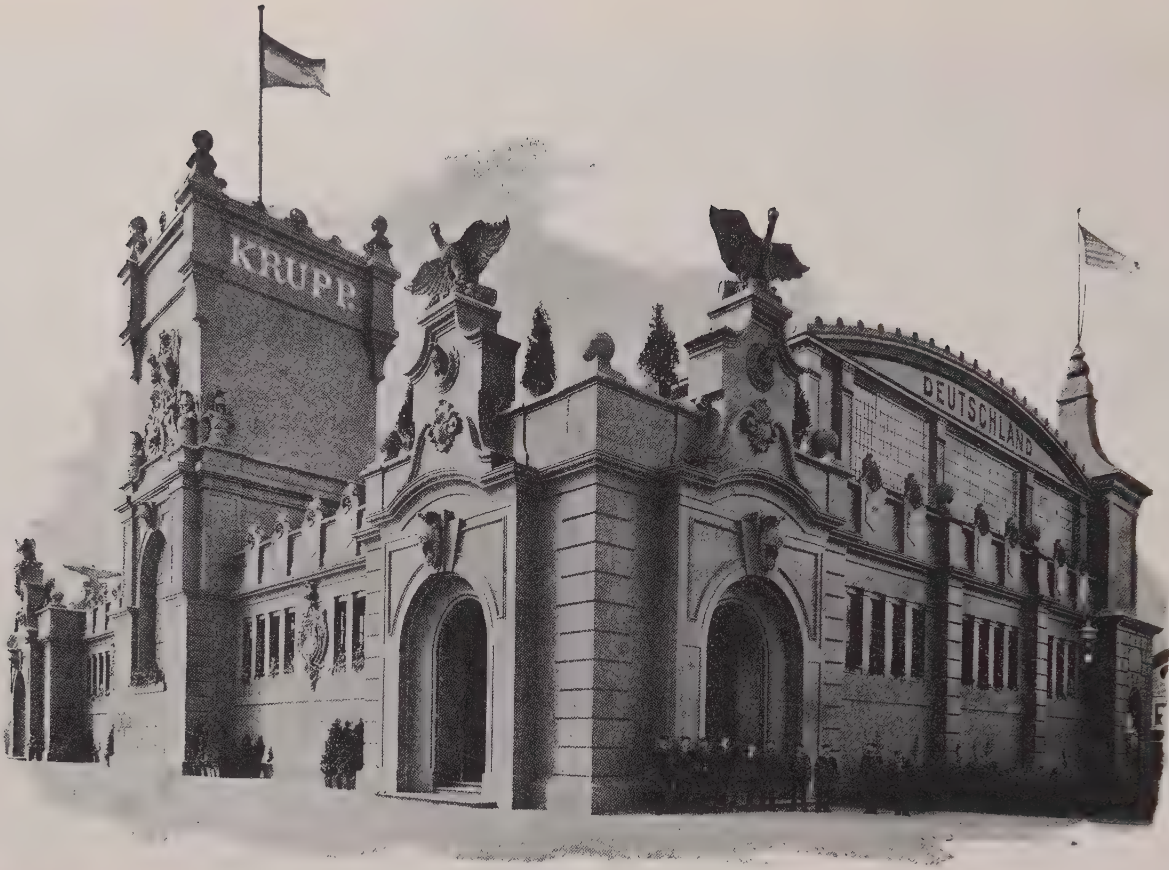
Surrounding this circular court, laid in light colored mosaic, are rooms designed for business purposes or friendly meetings; but the tailor's pavilion is not merely a resort for members of the craft with their friends and families, for here are many typical exhibits, including, as an illustration of the perseverance and ingenuity of olden days, a colored cloth, hand stitched, and made of nearly 6,000 pieces of tailors' goods. Neither stitch nor seam is in sight, and to complete this remarkable specimen of workmanship was the eight years' task of its artificer. On wire frames and wax dummies are displayed the styles of costume prevalent in social, court, and military circles. Here, for instance, are the tailor-made trappings of Queen Victoria's ladies-in-waiting; the liveries of her coachmen, and the uniform of General Miles, with business, dress, and other suits, reversible garments, and costumes decorated with devices suggested by the Columbian anniversary.

LEATHER PAVILION

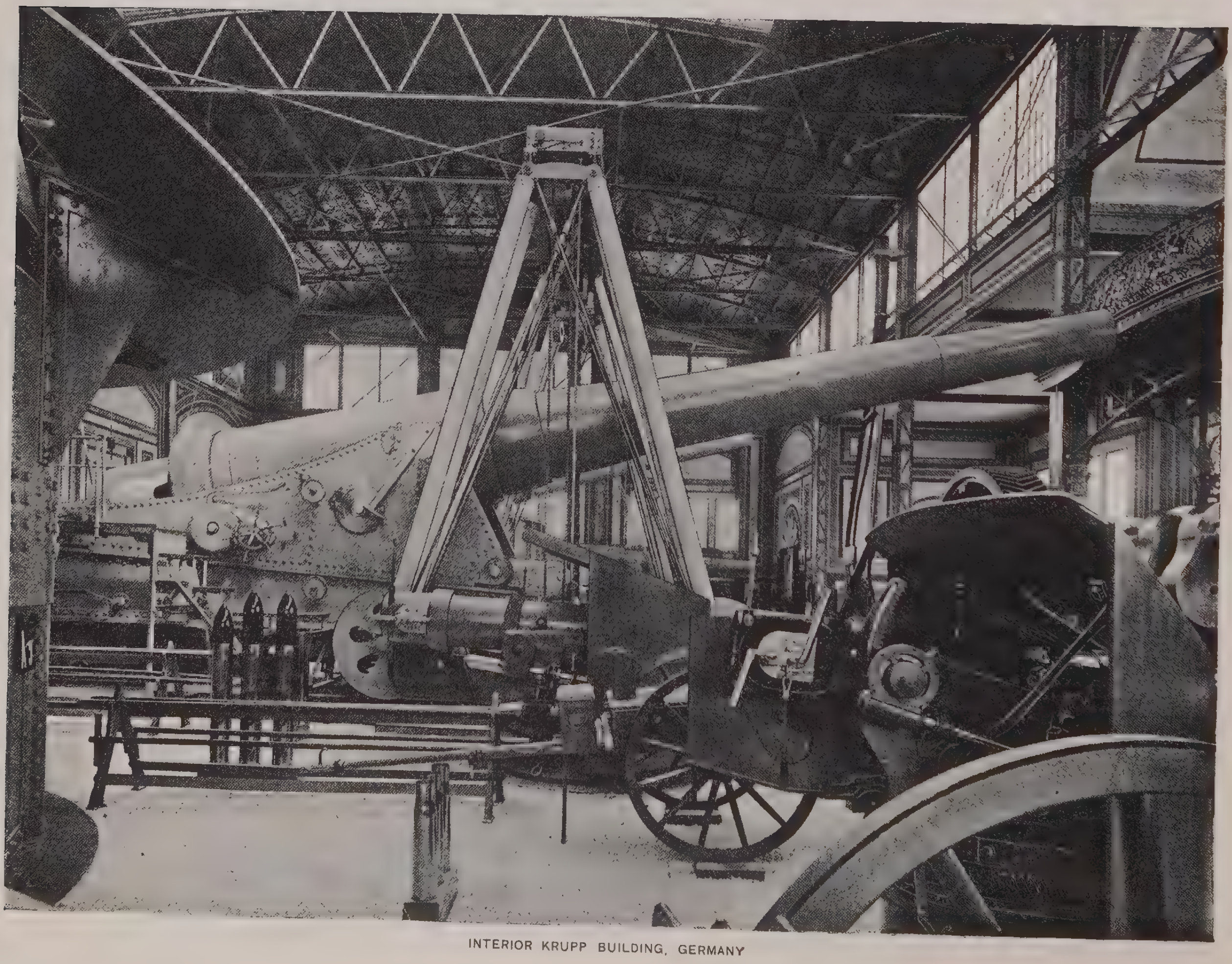
On the lake shore, south of the convent of La Rabida, is a castle-like structure, with towers at either end, typical of the Fatherland, and on its eastern side a tower decorated with the shields and coats-of-arms of the several German states. Here is the exhibit of guns and missiles, mammoth and miniature, manufactured at the Essen works of Friedrich Krupp. Extending along the western wall of the pavilion are sixteen monster guns, with their cavernous muzzles pointed lakeward. The giant of the group, protruding from the centre of the array, was installed in its position after



BRAZILIAN SECTION, SHOE AND LEATHER BUILDING



KRUPP BUILDING GERMANY

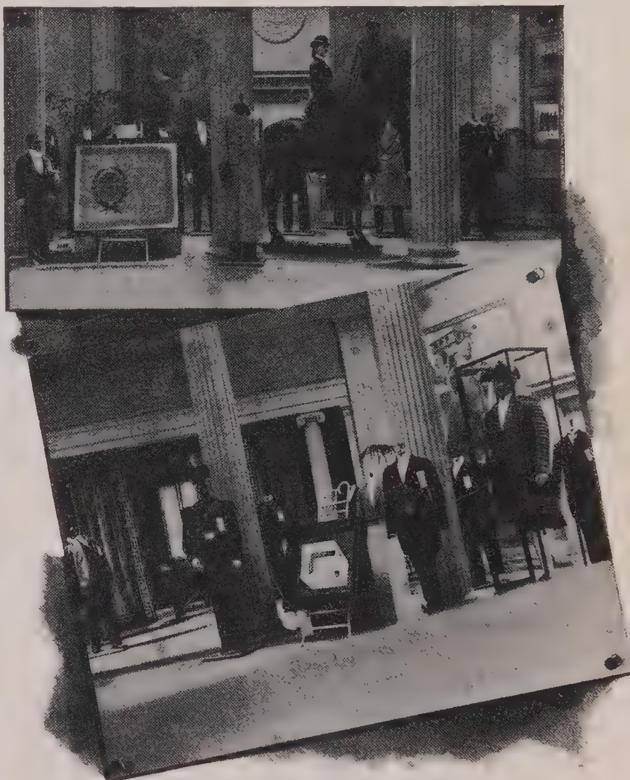


INTERIOR KRUPP BUILDING, GERMANY

MERCHANT TAILORS' BUILDING

an eventful journey, attended by special envoys, and hauled through several states on a car made specially for the purpose.

In this weapon it would almost appear that the limit of size and carrying capacity had been reached; yet many a time before has this been vainly predicted. To say that the gun will throw as a projectile for a distance of twelve miles a solid ton of metal, that to start this missile on its way requires a quarter of a ton of powder, that the gun itself weighs 101 tons, affords but a feeble description of the great leviathan of war. From the floor of the building we look upward at an angle of forty-five degrees and then can see only its under surface, supported on a carriage of massive and complex design, and around it the steam and electric appliances whereby is brought into play its awful potency for destruction.



INTERIOR MERCHANT TAILORS' BUILDING

Around the great guns are their projectiles, by the side of which are thick plates of armor, torn like folds of paper. Beneath the monster weapon, the largest in existence, is a tiny gun which has seen service in the hands of an African bushman, and near by are the smallest of mountain howitzers, such as may almost be carried by a man, and are often strapped to the backs of mules.

WHALER "PROGRESS"

The eastern portion of the building is devoted to such exhibits as the prow, rudder, shaft, screw, and other metallic portions of a modern steamer, with a shaft ninety feet long and three in thickness. There are also steel driving-wheels for locomotives, and protective plates for the bows and sterns of merchant vessels. In a word there are few articles of steel, whether pressed or forged, such as are used for protective purposes, which have not a place in the collection, for in these works are more largely produced the means of defense than the enginery of destruction. On the walls are photographs and paints of the Essen factory, and in the office are models of the ancestral home of the Krupps, and of the monument erected in honor of the late Alfred Krupp through the voluntary contributions of officials and workmen. In the centre of the pavilion are the so called glacier fountains, cooling the atmosphere, and serving as a relief to their sombre environment.

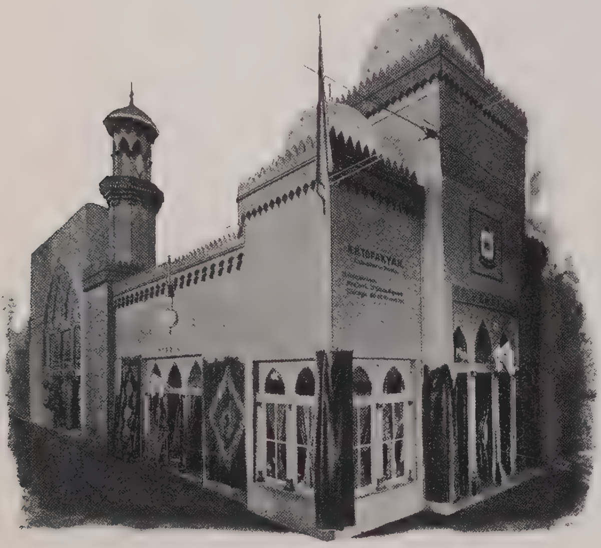
Finally there is a wrought-iron balcony, designed and executed by citizens of Düsseldorf, from which is an excellent view of the building and its contents.

World's Fair Miscellany.—Of the 16,500,000 feet of lumber consumed in the hall of Manufactures and Liberal Arts, more than 3,000,000 feet were for the flooring and underpinning, and the foundations of the girders, the remainder being principally used for the galleries. All of it came from the northwest, except 4,000,000 feet of southern pine. The main floor is two inches thick, and the floor of the galleries one inch. Both were so constructed as to withstand five times the pressure to which they would probably be subjected, mainly with a view to prevent the vibration apt to occur in a less solid building. No danger is apprehended from tornadoes, every pillar in and under the building having a separate foundation, so that it is prepared for the fiercest storm to which the land is subject.

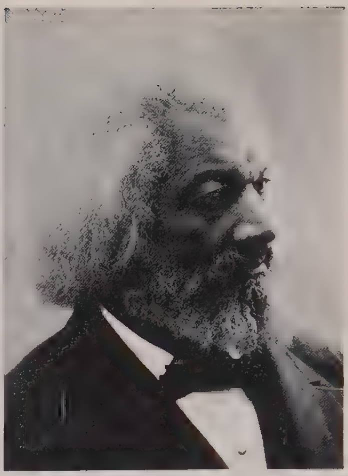
For lighting the Manufactures building there are used five electroliers, suspended longitudinally 60 feet from the roof, and 140 feet from the floor, the central one fitted with 102 powerful arc lights, and the others with 78 lights, each of 2,000 candle power, making in all 414 arc lights and 828,000 candle power. There are additional lights for the aisles, loggias, galleries, and inner spaces, supplementing the main system and giving stronger emphasis to the grand proportions of the building. For the great search-light on the northwest corner, already mentioned, it is claimed that a newspaper can be read by its light at a distance of eight miles. The apparatus, which is eight and a half feet in height, includes a mirror, ground and polished on both sides, and a lamp operated by electric motors placed under the platform.

Around the edge of the main semi-circular roof is a promenade, nearly a mile in length, reached by elevators running to a platform beneath, from which a stairway leads to the roof. Here the city of the Fair and of Chicago may be viewed from a height of 240 feet, and on a clear day the cities on the opposite side of Lake Michigan are distinctly visible.

The work of installing the exhibits in the Manufactures building was finally completed on the 17th of June, on the evening of which day a reception was held, with formalities suitable to the occasion. For two years the chief of this department, James Allison, labored without ceasing to insure its success, finally "presenting, under one roof," as he says, "in a congruous, comprehensive and representative series of exhibits, the results achieved in most of the great divisions of human industry and ingenuity."



The following regulations, framed by Mr Allison, and approved by the director-general, apply also to other departments of the Exposition, in addition to the general regulations already mentioned. Exhibitors must be producers or manufacturers of the materials or finished goods intended for exhibition. All applications must be accompanied by a suitable diagram, on a stipulated scale, explaining the plan and distribution of the exhibits. No fire, inflammable oils, or other combustible materials would be allowed within the building. All designs for pavilions or other structures, and for platforms, cases, and partitions were subject to approval by the director-general; platforms to be not more than seven inches, and counters two feet ten inches above the floor, with railings two feet six inches above the platforms, all to be kept within the space assigned to the exhibition. Signs must be so placed as not to obstruct the light or view, of uniform design, and must not be made of inflammable materials.



FRED DOUGLASS

In one of the cases in the Tiffany pavilion is an interesting collection of precious and other stones, including the largest rock crystal found on this continent, and an engraved diamond, the only one in the United States, the cutting of which was performed at intervals extending over five years. The display of gems in this pavilion includes about 10,000 diamonds, and of pearls an unknown quantity, the latter valued at little short of $400,000. There is also a complete assortment of precious and other stones, such as are used in the lapidarian art, from their crude state as contained in the matrix to perfectly cut and polished gems. At times are shown in practical operation the processes of cutting and polishing diamonds.

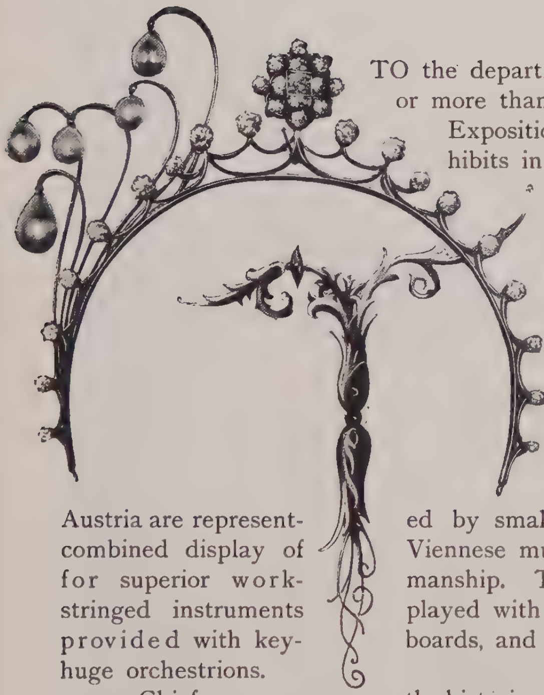
To the groups in the American section, consisting of woolen goods and mixed textiles, contained in square black cases of unsightly aspect, and contrasting somewhat sharply with the tasteful foreign pavilions on the opposite side of the nave, was given the name of the Undertaker's section of the Manufactures department.

Of gas stoves, apparatus, and fittings, there is a large display, though not so large as was anticipated, for it was the original intention to erect a separate building for the purpose. Two Chicago firms have an elaborate collection, including the latest devices in the way of burners for heating or manufacturing purposes, so constructed that gas and air form a clear blue flame of great power. There are also instantaneous heaters, of American make, attached to bath tub and other fixtures, and heating water to the boiling point in the briefest space of time.

The exhibit of shirts in the clothing group is mainly by New York manufacturers and the Zion's Coöperative Union of Utah. On this class of work sewing-girls in the eastern states average only some $5 a week, much of it being done by charitable institutions, while the shirt-makers of Utah can earn from $8 to $10 weekly.

CHAPTER THE TENTH

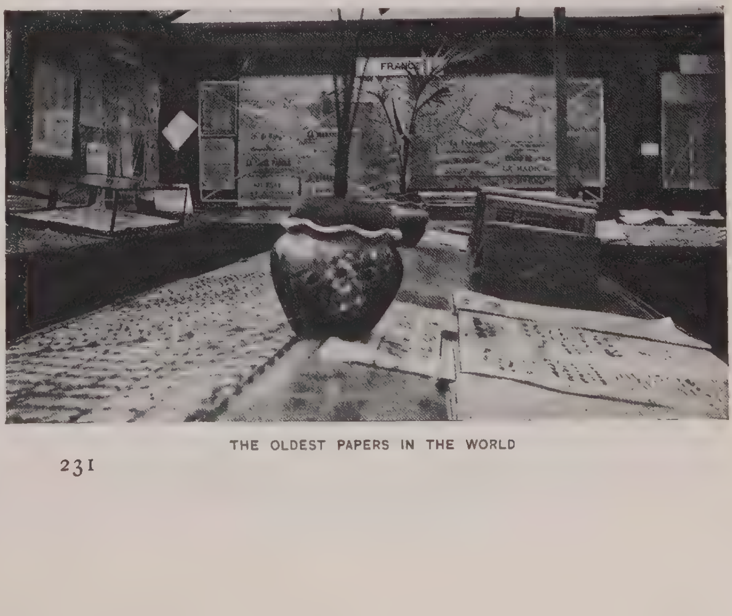
LIBERAL ARTS



SELIM H. PEABODY

TO the department of Liberal Arts was assigned a floor space of 400,000 square feet, or more than ten times the room allotted for similar purposes at the Centennial Exposition. It was at first intended to place the exhibits in the southern end of the hall of Manufactures, and about equally divided between its ground and gallery floors. But as finally arranged, the only group on the main floor is that of musical instruments, which occupies nearly 70,000 feet in the south-eastern portion. Here is a large and varied display of organs and pianos, fashioned by some of the foremost makers in the United States, with historical collections and handsome pavilions devoted to special exhibits, national and individual. Of foreign powers only Russia and Austria are represented by small exhibits, the Austrian collection forming a combined display of Viennese musical manufactures, among which the zithers are especially noticeable for superior workmanship. The entire department has many specimens of self-vibrating pieces; of stringed instruments played with the fingers and the bow, as banjos, guitars, harps, and violins; those provided with keyboards, and wind instruments, from simple fifes to complicated orchestral pieces or huge orchestrions.

Chief among the historic groups, and indeed the only one that can be termed a purely historic collection, is that of L. Steinert, of New Haven, who exhibits, among other curios, Bach's clavichord, one of the earliest of keyed instruments, which gives forth a thin and feeble tone. The collection includes several specimens of old-fashioned harpsichords and spinets, among them Mozart's spinet, upon which he composed many of his grand sonatas. There is also Beethoven's grand piano of six and a half octaves, with frame of rosewood and hinges of brass. Near this is Haydn's piano in a white oaken case, of deeper and fuller tone than most of the earlier instruments.



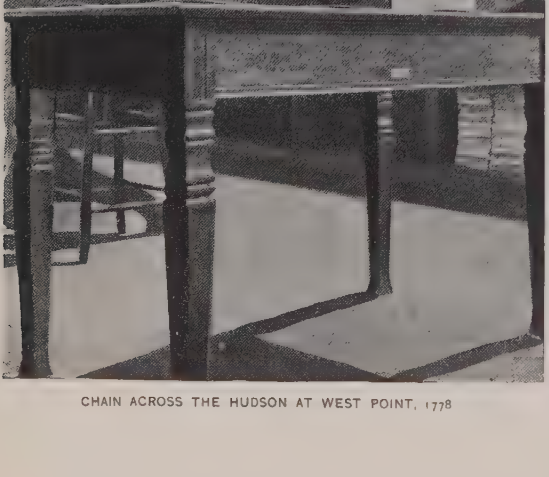
THE OLDEST PAPERS IN THE WORLD

VIEW FROM GALLERY OF MANUFACTURES BUILDING

Other interesting relics are an eighteenth century harpsichord, with double board and keys of tortoise shell and ivory, its case profusely decorated with floral designs, and a piano built in London in 1776 for Martha Washington.

The exhibits of the United States cover the entire range of musical appliances, including not only all modern instruments, but their accessories, and the materials of which they are made. New York manufacturers display, for instance, felts, hammers, wheels, discs, and cones, with spruce sounding-boards made from forest woods in the Adirondacks. In their pavilion are also illustrated the various processes in the manufacture of felt, from the raw material to the finished product. A Boston house exhibits in the way of musical specialties pianos, cabinet organs, and Liszt, or chapel organs, one of the last decorated in white and gold, and its pipe top representing the Bay State capitol on Beacon hill. But the largest collection is that of a Chicago firm, in whose two-story pavilion, decorated in terra cotta and gold, are many rare and costly instruments. One division is filled with harps of massive workmanship, highly polished and ingeniously decorated, ranging in value from $700 to $2,200. In an adjoining case are dainty mandolins and guitars, one of the latter a Stradivarius of the date of 1680, for at times the great artificer fashioned other musical instruments than violins. In an adjoining section is an array of banjos, and elsewhere are bass drums, and huge batons with massive heads of gold and silver. Together with the drums and batons is a strange looking stringed instrument, the body of which is a large bamboo. This is a reproduction of the mahati, or great vina, one of the favorite instruments of Upper India during the thirteenth century. In this pavilion a winding stairway leads from the main exhibits on the ground floor to a small recital hall above, where daily concerts are given by performers on the harp and guitar.

ORGANS AND PIANOS

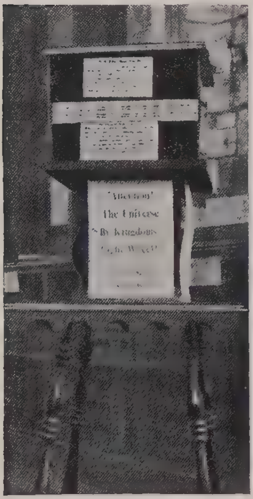


CHAIN ACROSS THE HUDSON AT WEST POINT, 1778

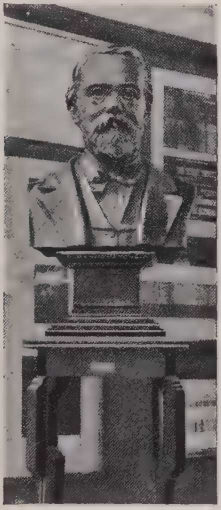
CONGREGATIONAL CHURCH

But the bulk of the musical exhibits, and the choicest specimens of mechanical and artistic workmanship, are found in the hundreds of pianos, which testify more than all else to the growing tastes of a music loving people. Mahogany, rosewood, satin wood, ebony, cedar, oak, ash—all the cabinet woods of the tropic and temperate zones—enter into their construction. Some are enamelled; some are finished in white and gold; others in ebony and gold; many being elaborately carved, though not a few are merely painted by hand. In style of architecture they differ almost as widely as the homes of the Fair, and this remark applies also to the organs, of which there is a choice collection.

To the educational groups were assigned about 175,000 square feet, including the entire southern aisle of the gallery, and a portion of the eastern and western aisles adjacent. Here is probably the most comprehensive collection of the kind ever brought together, including specimens, descriptions, apparatus, models, and programmes pertaining to every grade and class of education, from the kindergarten to the university, and to schools of medicine, law, and the mechanic arts. To these groups more than thirty states and territories have contributed, with several foreign powers, and some fifty universities and colleges; but of the four acres or more of educational exhibits therein contained, only the more salient and interesting features can here be noticed.



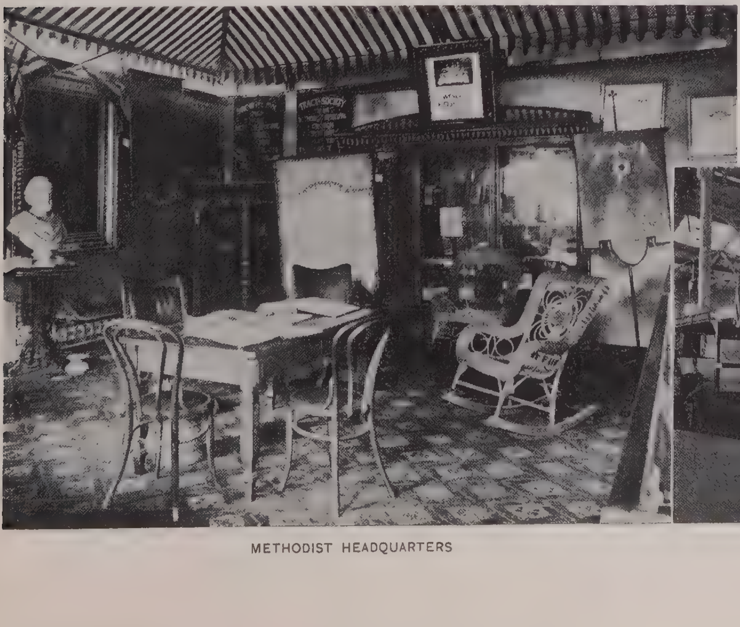
FIRST TELEGRAM



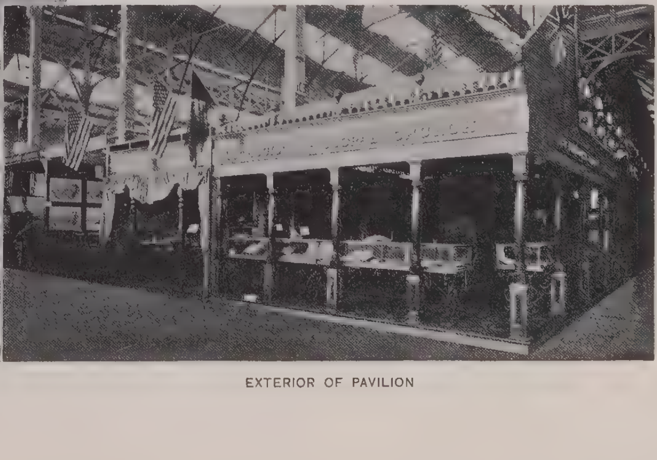
JOHN W. DRAPER

LUTHERAN HEADQUARTERS

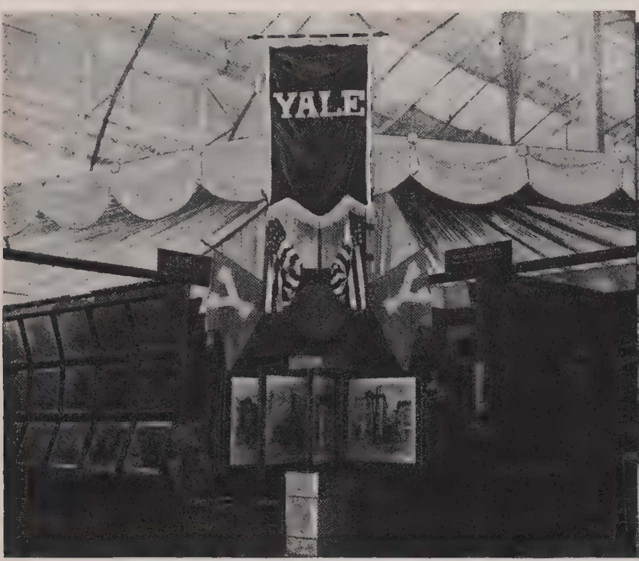
In the sections occupied by the United States is fully illustrated the progress of

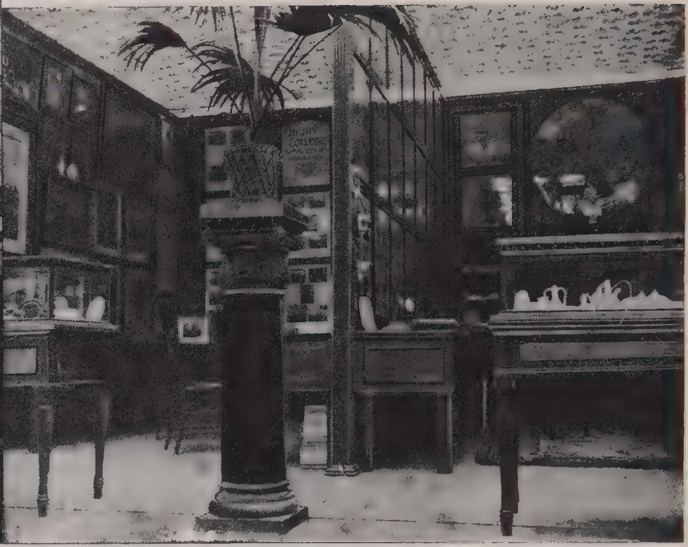


METHODIST HEADQUARTERS

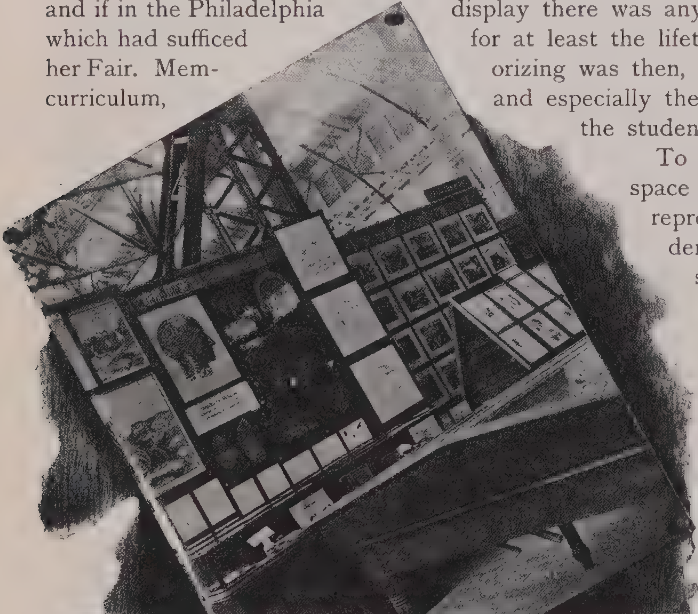


EXTERIOR OF PAVILION


YALE UNIVERSITY EXHIBIT


MISSOURI UNIVERSITY EXHIBIT

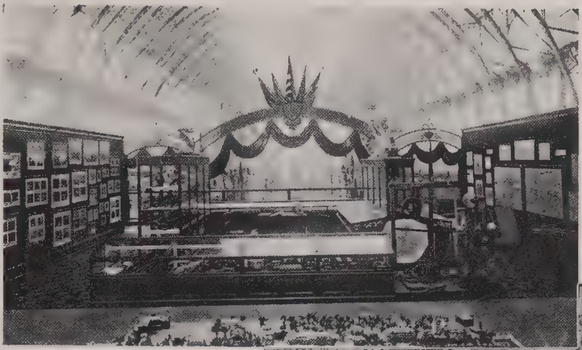
educational science within the brief span of years that have elapsed since the opening of the Centennial Exposition. The kindergarten or play-school system which Friedrich Froebel introduced in Germany, well nigh half a century ago, was then in its infancy. As to the Pestalozzian system there were few, even among professional teachers, who knew anything more than its name. Manual training schools were almost unknown, and if in the Philadelphia display there was anything suggestive of methods more advanced than those which had sufficed for at least the lifetime of a generation, it is not recorded in the annals of her Fair. Memorizing was then, as to-day it is, an all too prominent feature in the curriculum, and especially the memorizing of rules which, on leaving school or college, the student will surely make haste to forget.



To each of the exhibiting states is allotted a separate space in the group to which it belongs, and where are represented not only its public school system, but its denominational, normal, scientific, technical, and other schools and colleges. There are also collective exhibits showing the organization and management of school libraries, of commercial and industrial schools, of schools where trades are taught, and of institutions for the deaf and dumb, the blind and feeble-minded. A feature of the entire display is the specimens of handwork, with drawings and maps, essays, and answers to given questions on subjects assigned to the pupils of participating institutions, thus showing the achievements and acquirements of their alumni as the result of scholastic training. Statistics are

HARVARD COLLEGE EXHIBIT

JOHNS-HOPKINS UNIVERSITY EXHIBIT

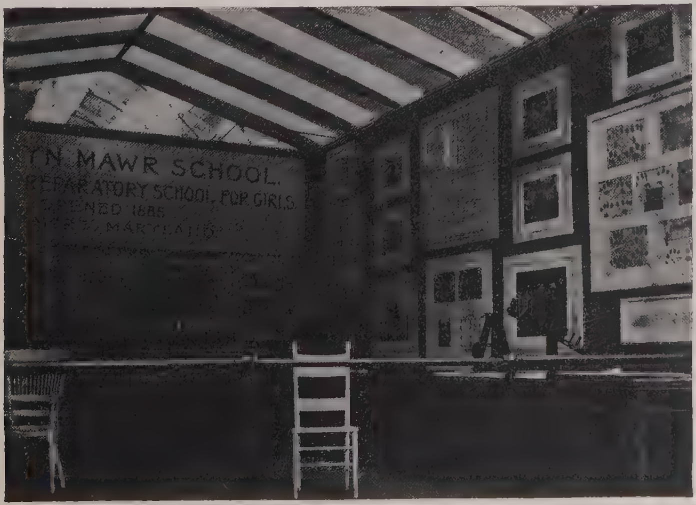


presented both in the form of text and diagrams, showing school populations, the ratios of elementary, secondary, and superior education, race, sex, attendance, revenue, and other data in this connection. Of the fourteen million pupils and 400,000 teachers represented in the educational exhibits of the United States, about one-tenth belong to the state of New York, to which was allotted a liberal space in the southern aisle of the gallery, and thence northward in a parallel line with the Massachusetts section. On a chart fourteen feet square, made by the pupils of the Albany high school, are portrayed in attractive form the school statistics of New York. Of the products of her manual training schools there are selected samples. In 150 phonographs may be noted the various systems of singing as taught in as many schools. Of kindergarten specimens there is a large collection, especially from Rochester, Buffalo, and Albany, with photographs showing the children at work or play. Beginning with the best work of the primary grades, we come to that of the intermediate grades, and then to the exhibits of high schools and academies, culminating with those of Columbia college and other institutions in which are represented our higher system of education.

PRINCETON COLLEGE EXHIBIT

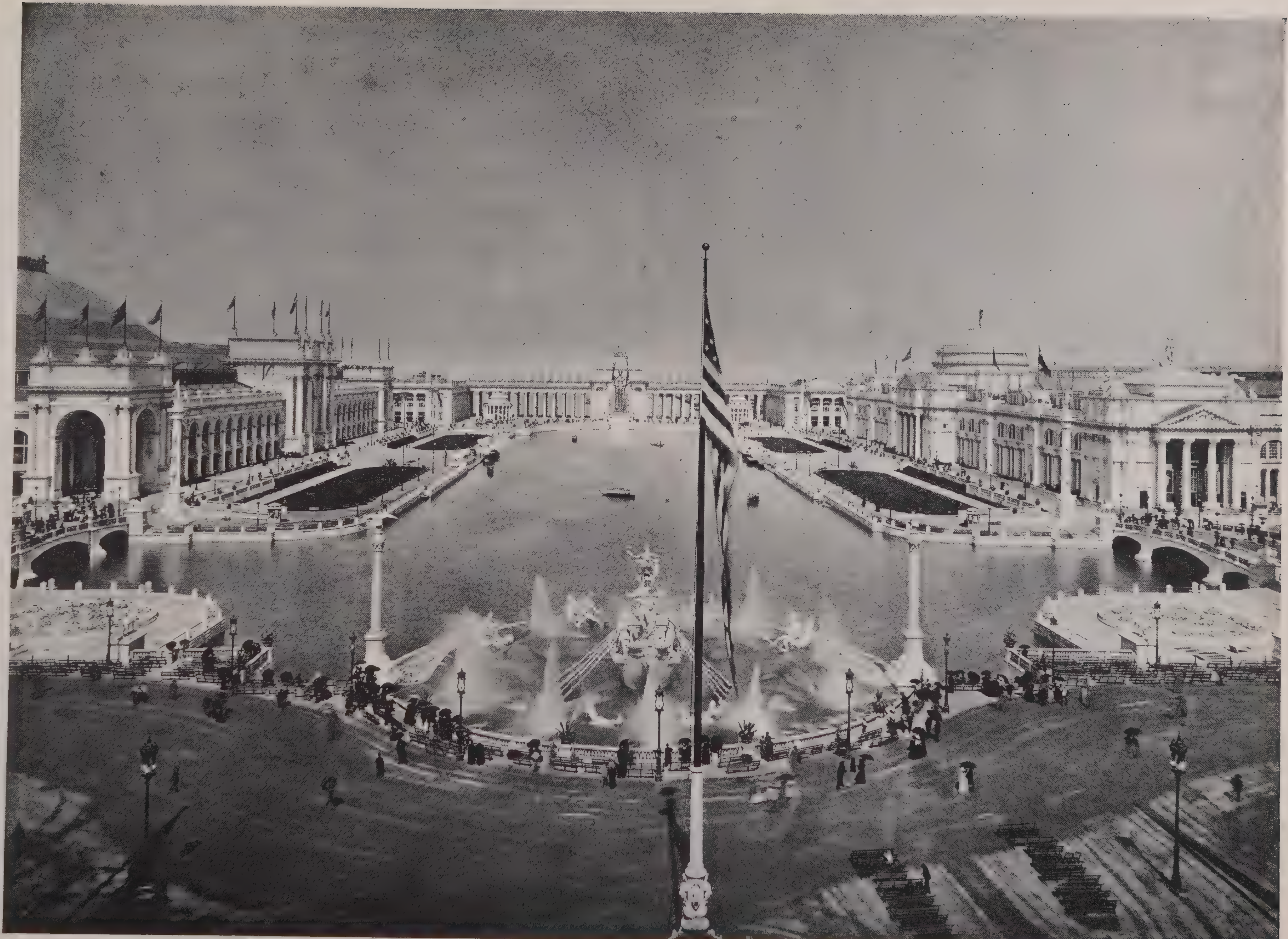
OBERLIN COLLEGE EXHIBIT

Founded in 1784, the state university has no counterpart in this republic, for with it are affiliated some 500 colleges and academies, and in its system are included the state library, the state museum, and other libraries and museums admitted by the regents to association. The university of the city of New York has on exhibition the publications of the faculty for the past sixty years, among them the works of John W. Draper, whose *History of the Intellectual Development of Europe* has been translated into a score of languages. There are also scientific apparatus invented by the professors, with charts and papers illustrating their methods of teaching and examination. Of special interest is a photographic portrait of Draper's sister, taken by the historian

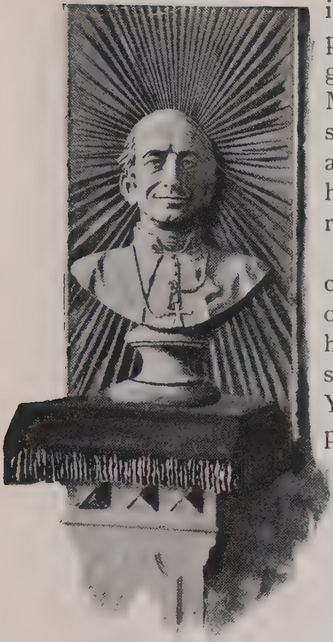


BRYN MAWR SCHOOL EXHIBIT

UNIVERSITY OF CITY OF NEW YORK



GRAND BASIN FROM ADMINISTRATION TOWER



POPE LEO

in person, presented to Sir John Herschel, and recently found among the posthumous papers of the great astronomer. This is probably one of the oldest of existing photographs of the human face. Another curiosity is the original battery used by Samuel Morse, fashioned in the room now occupied by the junior class of the University law school. On the label of the case which contains it is the following extract from an address delivered by Morse at a meeting of the alumni in 1853: "Your Philomathean hall—the room I occupied—that room in the university was the birthplace of the recording telegraph."

To the Massachusetts section many cities and towns have contributed, forming a complete illustration of her educational methods and results. As in the New York and other sections, the public-school exhibits lead up to and are connected with those of higher institutions of learning, at the head of which is the university; for such is the system generally adopted by exhibiting states. Of the elaborate collections of Harvard, Yale, Princeton, and other universities and colleges, grouped as many of them are in proximity, it is unnecessary here to make other than passing mention. They include among their exhibits, pictures, diagrams, and models of their buildings and grounds, their museums, libraries, laboratories, and assembly-halls, with college and other publications, and with portraits of professors and alumni who have won for themselves distinction and repute. There are also manuscripts, missals, charters, and other documents in the original or in fac-simile, with relics and curios that cannot be purchased for gems or gold. In this allusion to university and college displays, the term is here applied to such institutions proper; for in the United States the word college is of wide application, and in these booths is a vast range of illustrations, from theses in Latin and Greek to plates showing the relative values of lucerne and oaten hay.

CATHOLIC HEADQUARTERS

In connection with these exhibits may be mentioned that of the College fraternity, whose site in the north-west corner of the gallery is marked by a reproduction of the Choragic monument of Lysicrates. The side walls of the pavilion are in imitation of ebony, with gilt ornamentation; and here are the badges characteristic of the so-called Greek letter societies. In bookcases is contained the literature of the fraternity, in the form of bound volumes, magazines, and college annals, and under the clear-story window included in their space are portraits of their prominent men, with charters, symbols, and historic documents.

EXHIBIT OF MILWAUKEE DIOCESE

Near the Massachusetts section, and extending thence westward along the southern aisle, are the groups of other New England states, each with a characteristic display. A feature in their collections, and especially in the Connecticut section, is the sewing work represented in articles of attire or domestic use, most of it the handiwork of girls under twelve years of age. Except for New York, Pennsylvania has the largest collection among the middle states, and one of excellent quality, for her educational system is on a par with her material greatness, as is attested by the superior workmanship and finish of her specimens. New Jersey has a compact and skillfully combined exhibit, with many original and suggestive features.

Ohio is mainly represented in the separate exhibits of three of her principal cities, Cincinnati, Cleveland, and Toledo, these being the only instances in which city schools occupy a prominent place. Missouri, with her ample school fund, has a good display of educational work, with a chart showing the location of her

HUMAN BRAIN

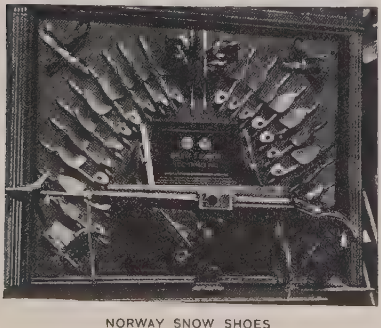
BENJ. FRANKLIN'S ELECTRIC MACHINE

school-houses, and filled with statistical and other information. In Louisiana's exhibit is fully illustrated the progress of the southern states, New Orleans contributing the bulk of the collection. Minnesota's section is arranged with a view to artistic effect, and of special interest are the specimens from the manual training schools of Minneapolis, Duluth, and Stillwater, and those of children's sewing which St Paul and Minneapolis have furnished. In the booths of Iowa are maps, drawings, photographs, statistics, and other collections in which are portrayed all the branches of her educational system. Colorado, though one of the youngest of the states, has furnished sufficient evidence that she is one of the most progressive in educational, as in other matters. In addition to numerous articles of school-work, the artistic qualities of her school architecture is shown in photographs, and there are models of the first school-house and the new high-school building completed in 1892 at Colorado springs. California and Oregon are strongly represented, the former by an elaborate and the latter by a compact exhibit of school and college systems, appliances, and results.

EDUCATIONAL EXHIBIT, NORWAY

As to other participating states and territories, what has already been said will serve to indicate the general character of their display. There remains, however, to be described, the largest of all the educational groups, that of the catholic exhibit, occupying 29,000 square feet in the eastern aisle of the gallery. To gather and classify this collection was almost a three years' task, and as the result we have one of the most attractive features in the department of Liberal Arts; attractive to all classes of visitors, whatever their creed or sect. In no sense of the word is this a sectarian demonstration; nor is it in the nature of a religious propaganda, except so far as it represents the influence of the church on the education of its people, forming a material exposition of what the church has done and is doing for the cause of education. In a word it is what it pretends to be, and that is a school and college exhibit under catholic auspices.

At a meeting held in Boston in July, 1890, about which time, it will be remembered, the Exposition began to assume tangible shape, the archbishops of the United States, with Cardinal Gibbons at their head, extended an invitation to the principals of all catholic institutions of learning to aid in preparing and organizing the exhibits. The preliminary arrangements were made in Chicago and St Louis, Bishop Spaulding accepting the presidency, and Brother Maurelian the office of secretary and manager of the commission. Then quietly and steadily they went to work, and with such good will that in the completed collection are represented nearly all their educational establishments throughout the republic, with many beyond the seas. In addition to the exhibits of parish schools, academies, colleges, and universities, are those of normal schools, of schools of science and technology, of commercial, industrial, and manual training schools, of schools for negroes and Indians, of kindergartens and orphanages, and of benevolent and reformatory institutes.

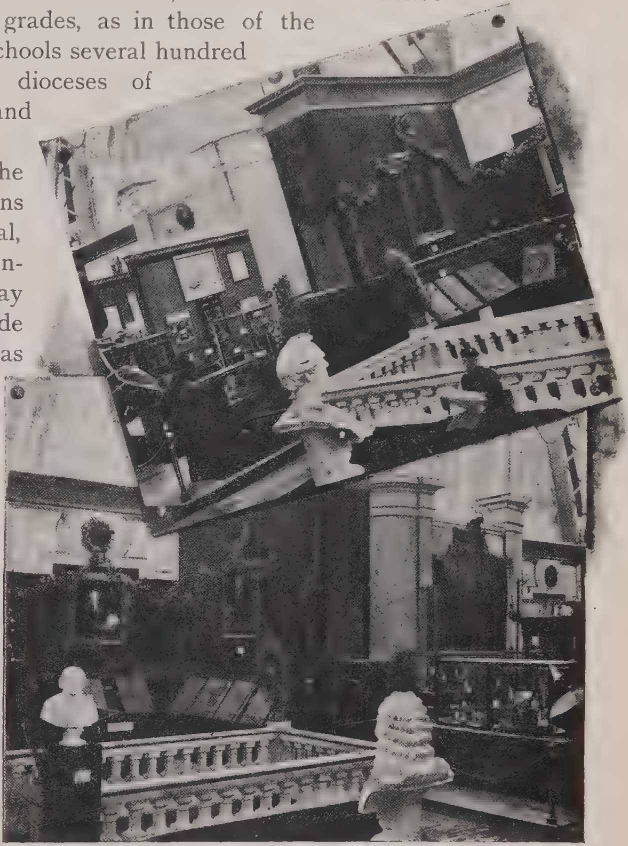


NORWAY SNOW SHOES

Almost in the centre of the group is a statue of Archbishop Feehan, carved in Carrara marble, and of chaste and elegant design. This was presented by the priests of the diocese of Chicago, and on the pedestal is inscribed beneath his name the simple legend: "The Protector of our Schools." Around it are arranged in booths the exhibits of the various dioceses of which nearly all the principal schools are represented. The collections include every

GERMAN SECTION

BUST WILLIAM II, GERMANY


EDUCATIONAL EXHIBIT, GERMANY

description and grade of educational work; but with no distinctive classification of the various grades, as in those of the public schools. Of parish schools several hundred are here represented, the dioceses of Chicago, Philadelphia, and Buffalo having the largest number. Add to these the exhibits of higher institutions of learning, and of industrial, charitable, and reformatory institutes, and some idea may be formed as to the magnitude of the display, representing, as it does, the aggregate results accomplished by all the numerous orders of priesthood and sisterhood, to whose care are intrusted the educational interests of catholic America.

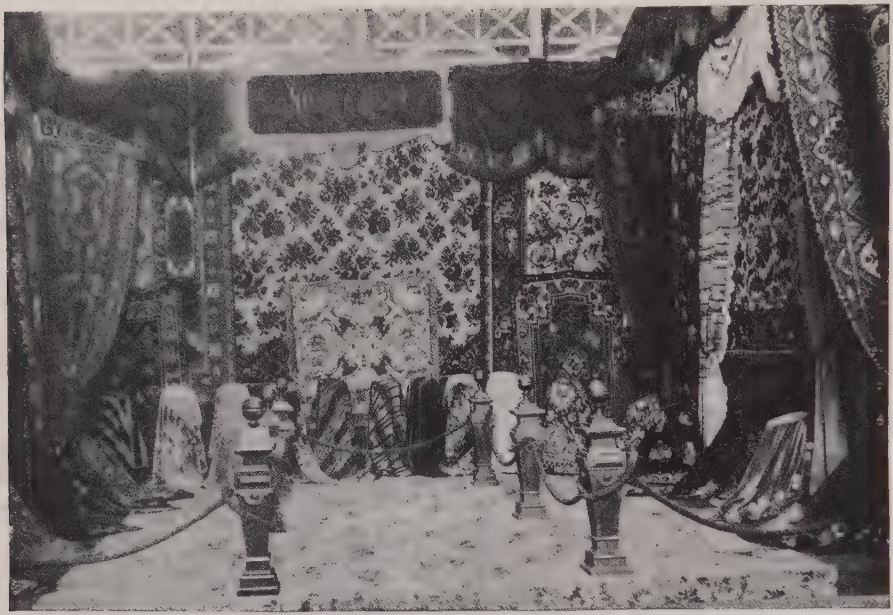
Among the more interesting exhibits is the display of industrial work, not arranged, as elsewhere, in separate groups, but in the booths of the several dioceses, where side by side are specimens from schools of technology, orphan asylums, and reformatory schools; for in these classes of work the church makes no distinction. In certain of the booths, however, there are special displays, as in that of the St Nicholas reform school at Paris, where are musical instruments, tapestries, laces and draperies, silver-plated ware, and decorative articles in bronze and copper, all these and others the handiwork of the pupils. Several booths are filled with samples from a New York orphanage, including, among others, wood-carvings, mechanical drawings, metal-work, and brush and rope making. And so with the diocesan collections, for in most of the dioceses are similar asylums, and one or more industrial and manual-training schools.

GERMAN KINDERGARTEN

Of school and college buildings, with their chapels, class-rooms, lecture-halls, libraries, and grounds, there are many drawings, paintings, and photographs. In graphic art are also represented groups of students and teachers, of music and sewing classes, and the workshops of training and industrial schools. Of paintings on porcelain, of free-hand crayons, mechanical and perspective drawings, and drawings from nature, there is a large collection, together with maps and hypsometric models of cities and countries. Printing and type-writing, plain and ornamental, electrotyping, carpentry, shoe-making, tailoring, needle-work, wax-work, as well as other useful arts and industries, are represented in the catholic exhibit.

Elsewhere in the educational section are the special exhibits of industrial and training schools, art and medical schools, business colleges, asylums, and other institutions not connected with the catholic church. Among the training schools represented are those of Chicago, St Louis, Cincinnati, Baltimore, and Toledo, the Carlisle Indian school, and the Hampton Normal and Agricultural institute for Indians and negroes, the two last pleading in silent eloquence for these wards of the republic. Worthy of note are the leather manufactures in the form of harness, satchels, trunks, and shoes, and the carved and inlaid wood and cabinet work.

ADOLPH WERMUTH



CARPETS AND RUGS, GERMANY

STAINED GLASS

The groups representing asylums for the deaf, dumb, blind, and feeble-minded form an elaborate display, and one in which are fully illustrated the most humane and intelligent methods of treatment and training. Manual work of a rough description the visitor would probably expect to find among the exhibits of schools for the blind; but to see there printed publications, free-hand drawings, and the finest of crochet work is somewhat of a surprise. A Washington institute for the deaf has contributed a replica of the monument erected at the national capital in honor of Gallaudet the elder, by whom was founded in Philadelphia the first American institute for deaf-mutes. Even from insane asylums are specimens of useful workmanship, for in such are not a few possessed of the rational faculty in greater degree than many outside their walls.

Among the art institutes represented in this department are those of Chicago and St Louis, the Cooper union, the Boston museum and the New York art students' league, while Pennsylvania has also collections from her museum, her academy of arts, and her Philadelphia school of design. In all these exhibits are illustrated by specimens the several courses in drawing and designing, together with systems of instruction, and their results in the competitive display of classes and pupils. In the medical section are the exhibits of eclectic, homœopathic, pharmaceutic, and other colleges.

ALTAR, GERMANY

ALTAR, GERMANY

The principal business colleges of the United States, apart from those under catholic auspices, have a collective display in the western gallery, with specimens of penmanship, stenography, and telegraphy, together with a class-room in actual operation, showing the workings of such institutions. Finally in the exhibits of Wellesley, Mount Holyoke, and other colleges and seminaries, together with those of several art schools, is represented the education of women.

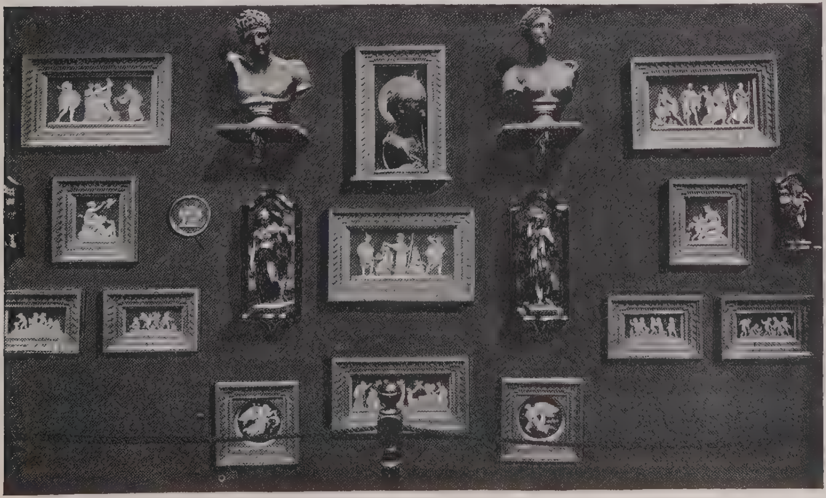
DOULTON TERRA COTTA

Among foreign powers Germany has the largest of the educational exhibits, in her 22,000 square feet of space in the western gallery. And here in truth is a display well worthy of a country famed for her thorough and scientific system of education, one in which the student may read that system almost as thoroughly as though he had travelled thousands of miles to study it. In this collection is a complete and explicit demonstration of the methods employed in the various grades, with plans, illustrations, statistics, and such other data as may render those methods intelligible. There are maps showing the location of all the higher institutions of learning, with paintings, photographs, and models of German schools, and geographical charts, some of them 400 years old, side by side with those of modern date.

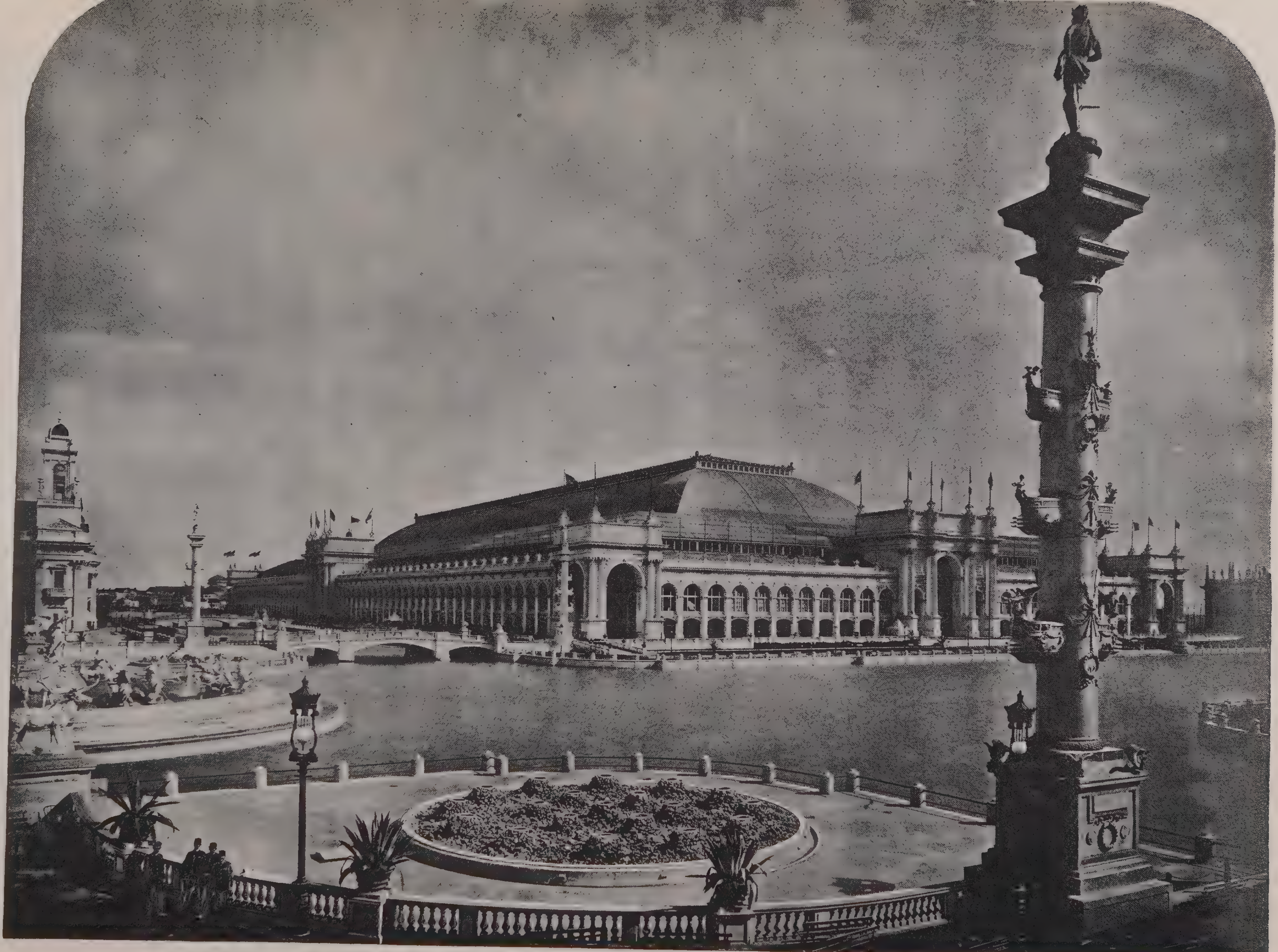
The educational exhibits proper are classed in three divisions, in two of which are those relating to public, normal, and high schools, to colleges of various grades, to asylums, and to the training of teachers. Among these collections are specimens of pupils' work, not specially prepared for the purpose, but selected as a fair illustration of what is being accomplished in the various school departments, including the manual training schools. In the high-school section are represented the latest and most practical teaching methods, especially in the natural sciences, which occupy an important place in the curriculum. There are also the annual reports of all the higher institutions of learning, including those for 1892, with histories of some of the oldest and most celebrated schools.

ENGLISH CHINA

But the most interesting of all the exhibits is that of the universities, twenty in number, and occupying about one-half of the space allotted to the German section. While in part of a special character, and intended to illustrate their leading educational features, there is much that is of general interest. First of all are large photographic views of the buildings, with elaborate plans and descriptions of each. On the walls are portraits of eminent professors and men of science, among them one of Alexander von Humboldt, of Kekule, and August Wilhelm Hofmann, from the royal library and national gallery of Berlin. Of autographs and autographic letters there is a choice collection, including those of Charlemagne, Louis the German, Karl I, Goethe, Schiller, Kant, Winkelman, and a despatch to the great ex-chancellor from Wilhelm I. On a fac-simile of a page in the church register at Bonn is recorded the birthday of Beethoven; all these and other treasures from university and state libraries, which have contributed, in 3,000 handsomely bound volumes, the best works of German scientists, inventors, and discoverers, with all the leading scientific periodicals.


TERRA COTTA, BRITISH SECTION

Together with models of ancient and modern laboratories and apparatus for scientific investigations are reproduced many of the principal inventions and appliances, including the telegraphic instrument fashioned by Gauss and Weber, in which is embodied Faraday's system of insulation, and the apparatus with which Kirchoff and Bunsen developed their method of spectrum analysis. There is also the first mirror which



PALACE OF MANUFACTURES AND LIBERAL ARTS

CANADIAN SECTION

Helmholtz constructed, and the air-pump which Otto von Guericke invented in 1650. A Guessfeld outfit includes all that is usually needed for scientific and exploring expeditions, and in botanical tables and charts is illustrated the mode of introducing and propagating exotic plants.

Of chemical specimens, small in size but large in number, there is a valuable assortment, mainly from the German chemical society, and so with mineralogy, zoölogy, and other natural sciences, most of which are here represented; but for the speculative sciences there is no place in the German section. A special exhibit by Rudolph Virchow, one of the foremost of pathologists, is in the form of a lecture hall, specially equipped for his purpose, and with a large anatomical collection; in another is reproduced an operating and dissecting room, and a third consists of a food collection for army and other purposes where concentrated nourishment must be produced at the smallest cost. But of all the special exhibits, perhaps the most interesting is that of bacteriological specimens and apparatus by Robert Koch, with bacilli of all known varieties stored in glass cases, and the instruments with which they are detected and placed under the light of the microscope.

In connection with the German section may also be mentioned the display of scientific instruments by more than forty manufacturers, fully sustaining the high repute of German craftsmen in this direction. Among them are lenses of all descriptions and sizes, and in every stage of manufacture, from the rough pebble or glass to the finished article, with photographs from such as are used in that art, as nearly perfect as photographs can be. For these and for optical and surveying instruments, both of which are here represented, there is

EDUCATIONAL EXHIBIT, NEW SOUTH WALES

CANADIAN INDIAN SCHOOLS

STAINED WINDOW

a large and increasing foreign demand. The astronomical instruments are of superior finish and precision, with ingenious methods for minimizing the effect of errors in construction.

FRENCH SECTION

Somewhat in contrast with Germany's elaborate display is England's exhibit, in which there is less to interest, less even than in those of her dependencies of Canada and New South Wales. This calls to mind the fact that England was among the last of the great powers to accept, as a nation, the responsibility of providing methods and means for public education. It was not until recent years that the evolution of her public school system was fairly commenced, and even yet she has no such coherent and comprehensive system as those of Germany and the United States. In the mother country the phrase public school is applied to Eton, Harrow, Rugby, and other endowed institutions, some of them founded in the fourteenth, and not a few in the fifteenth and sixteenth centuries. These and others established by religious denominations or through private benefactions, were, apart from her universities and private schools, about all that England had to show in the way of education.

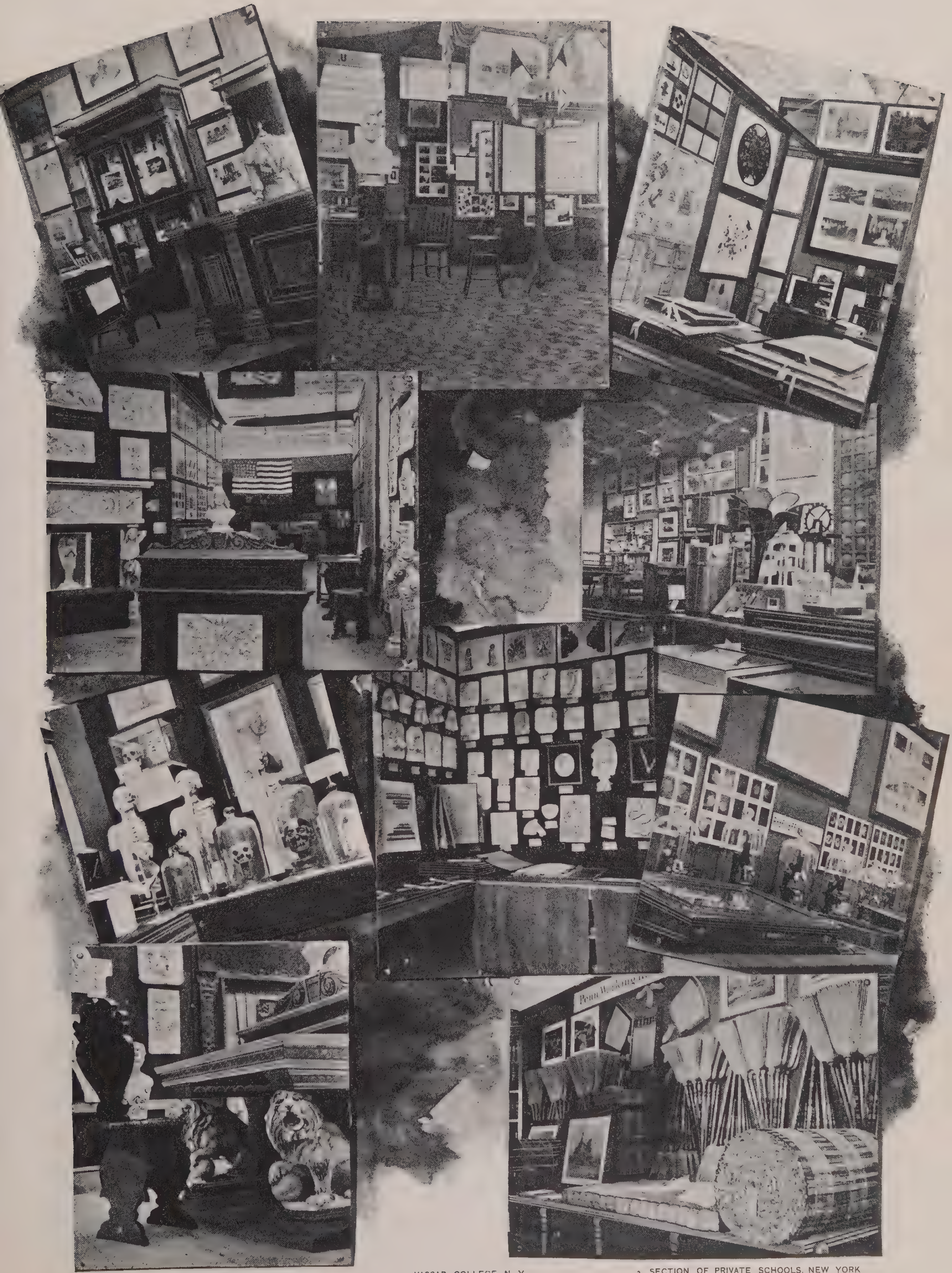
In the exhibits of the London school board are specimens of writing, map-drawing, designing, modelling, wood, iron, brass, needle, and kindergarten work, with school-books, materials, apparatus, models, and diagrams. Some are framed or pasted on cards, and to others cards are attached with inscriptions, giving the names of exhibitor and exhibit. From the Whitechapel craft school are drawings and models illustrating the system of manual instruction. In the exhibit of the Oxford examination schools are portrayed the history and method of university extension. Trinity College, Dublin, has a collection of anatomical models, and from schools of art are some of the drawings, paintings, models, and designs executed by their pupils.

DRAWING MODELS, FRENCH SECTION

RENOMMEE PAR INGALBERT

STAINED WINDOW

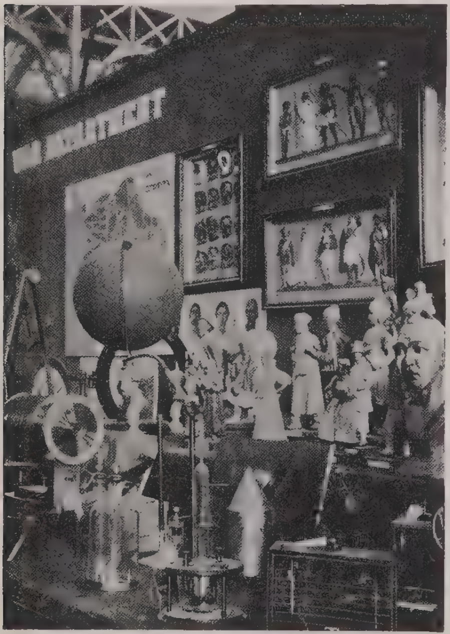
In this connection may be mentioned the elaborate collection of photographs, adjacent to the educational display, in which are represented most of the prominent photographers of



1 SCHOOL FOR THE DEAF, MICHIGAN EXHIBIT 2 VASSAR COLLEGE, N. Y. 3 SECTION OF PRIVATE SCHOOLS, NEW YORK
4 PENNSYLVANIA SCHOOL OF INDUSTRIAL ART, WOOD CARVING 5 SCHOOL FOR THE DEAF, JAPAN EXHIBIT
6 BERLIN UNIVERSITY OF ANATOMY, GERMAN EXHIBIT 7 GERMAN AND ENGLISH ACADEMY, MILWAUKEE, WIS 8 SECTION OF GERMAN EXHIBIT, DR KOCH
9 PENNSYLVANIA MUSEUM AND SCHOOL OF INDUSTRIAL ART AND WOOD CARVING 10 PENNSYLVANIA WORKING HOME FOR THE BLIND

Great Britain. There are also engravings, etchings, and photogravures from art societies and art publishing firms and associations. Elsewhere in this section are specimens of book-binding, and an assortment of newspapers illustrating the development and characteristics of British journalism.

TYPES OF RUSSIAN RACES

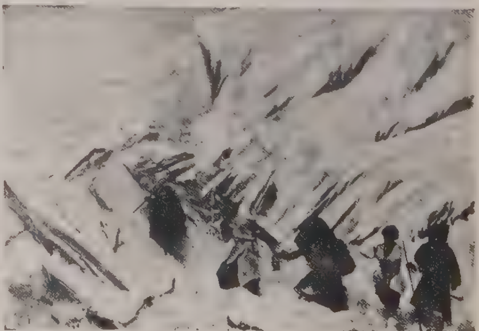

PEDAGOGIC MUSEUM, RUSSIA

Canada is represented by the educational exhibits of the provinces of Quebec and Ontario, housed in cheerful and tastefully furnished booths. Here are contributions from some 200 of the principal schools, most of them under catholic auspices, and including all branches of education, from primary to high-school grades and special courses. Class-room work is freely distributed, with samples skilfully arranged, and displaying the aptitude and proficiency of the pupils. Of excellent quality are the relief-maps, the specimens of ornamental drawing and penmanship, and the embroidery and other needle-work, the last from the institutions of the sisters of Notre Dame. Elsewhere in this section, and of similar character, are the collections of secular schools and colleges, with representations of the educational systems of the northwest provinces. In galleries of photographs are depicted scenes in the Rocky mountains, in Nova Scotia, and on the banks of the St Lawrence, together with the public buildings of Ottawa. Of musical instruments there is a small assortment, and the Scotch element finds expression in a display of curling stones of Toronto manufacture.

In the narrow space allotted to New South Wales are several hundred photographs in the highest style of art, portraying the history of Sydney, almost from the day when the British flag was unfurled on the shores of Port Jackson amid a group of naked, gibbering savages. Among them is one of the largest photographs in existence, reproducing the harbor of Sydney, one of the most beautiful in the world, and the largest on the southern continent except for Hobson's bay where Melbourne sits enthroned, and in the centre of which its shores appear in faintest outline, even under the bright Australian sky. In other photographs are depicted the public buildings and statuary of the metropolis, her parks and pleasure grounds, with the mountain and river scenery; the forestry and agriculture of a colony almost equal in area to the entire Pacific coast. There are also collections of water colors, one representing the animals, another the birds indigenous to the country, and supporting the Australian coat-of-arms, over the entrance to the pavilion, are the largest kangaroo and the largest emu that could be secured and stuffed for the purpose. Of natural specimens there is a choice assortment, including birds of brilliant plumage, and the web-footed ornithorhyncus, or platypus, with the bill of a duck, the eyes of a fish, and the fur of a seal. The Technological museum has a display of classified wools, and many varieties of timber and plants of economic value. For journalism a corner is reserved, while educational exhibits in the stricter sense of the term are restricted to those of the public schools, and to specimens of work from the deaf and dumb institute under government auspices.

TRANSPORTING MAIL IN SIBERIA BY DOGS

The exhibits of France in the eastern aisle of the gallery consist largely of samples of work from her polytechnic and training schools, both of which are prominent features in the educational system of this country. The public schools are also represented, as are the commercial and night schools. All the exhibits are grouped


RUSSIAN TRANSPORT OF MAIL BY MEN IN CAUCASUS

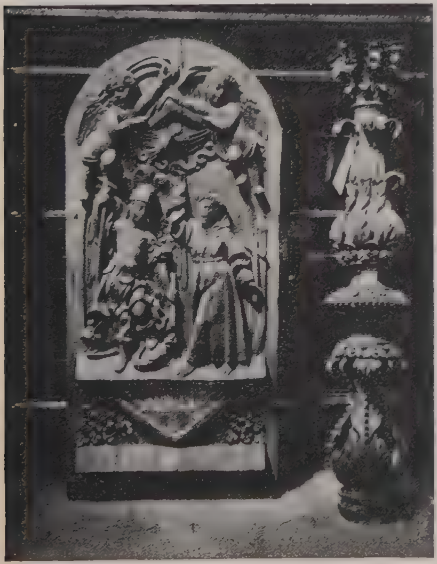
BELGIUM

SWISS WOOD CARVING

with the true artistic taste of the Frenchman, forming, as a whole, a complete illustration of school life, with exercises and examinations, and with text-books arranged in regular order and adapted to every grade, from the primary school to the university.

But the most interesting feature in this section is a representation of the library systems of France, together with her stationers', booksellers', and bookbinders' trades. Among rare and valuable works is De Lamennais' *Imitation de Jesus Christ,* its 102 quarto pages all decorated in different designs, with four large pictures from manuscripts of the thirteenth to the sixteenth centuries, and with ciselure work such as is found in the illuminated manuscripts of bygone ages. A priceless treasure is the *Heures*, belonging to the first quarter of the thirteenth century, in small octavo on vellum, with French and Latin characters, and miniatures painted on gold ground in relief, all in the purest of classic style. Other curiosities are a reproduction in old morocco of Madame de Pompadour's writing-case, with flowers in mosaic; a prayer-book with borders, miniatures, and Gothic letters executed in silk; a *Livre de Marriage*, with bas-relief in carved ivory, and a card-case representing the finest cuir-ciselé work of the renaissance. Still another rare work describes the triumphant entry of Charles IX into his capital, and in *Ces Présentes Heures*, Paris, 1498, is a miniature figure of an angel, copied from the prayer-book of Anne of Brittany.

Under the auspices of the Cercle de la Librairie, founded in 1847 on the eve of the revolution, and including more than 400 members, a catalogue was specially prepared for the occasion, containing much that is of interest. Here may be read the history of the more famous printing and publishing houses, one of them founded in the seventeenth and several in the eighteenth century; for in France a business, once fairly established is often preserved in the family for several generations. Sixty of the members of this association are represented in the French section, and among their exhibits are many choice works, especially in *ouvrages de luxe*. Of these may be mentioned *Les Maitres Florentins de XV Siecle*, with illustrations from original paintings and sculptures in the Thiers collection; the first of two folio volumes by Edouard Rouveyre, relating to the manuscripts of Leonardo de Vinci, with copies of the originals; Charles Blanc's *Histoire des Peintres*, and Le Vasseur's editions of Buffon and La Fontaine. Other editions de luxe are from a publishing house in Tours, whose establishment covers six acres in the heart of the city, and from which are issued several millions of volumes a year. Other publications



ANCIENT MEXICAN CARVING

BELGIUM

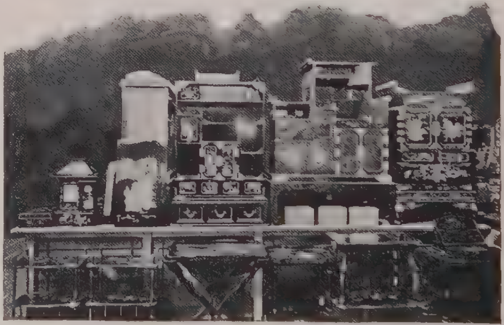
worthy of note are illustrated editions of Victor Hugo's works, one in forty-eight and another in seventy volumes, and those of Sir Walter Scott in thirty volumes, of which only twelve are on exhibition, with illustrations by the foremost of French artists, costing or to cost, when completed some twenty years hence, the sum of $150,000.

HARDWARE AND PICTURES

JAPAN

Russia has much to show in her 1,000 square feet of gallery space, largely occupied by specimens from hundreds of orphan and other asylums with their hundreds of thousands of inmates. Among their specimens of needlework is a beautiful piece of embroidery representing the arrival at Russian ports of American vessels laden with grain. This is the handiwork of St Petersburg school-girls from twelve to fourteen years of age, and at the close of the Fair is to be presented, as a token of gratitude, to the wife of President Cleveland, while for the president himself was fashioned a mantel ornament in gold and silver thread, interwoven on a background of dark red silk. From national and private schools and other educational and charitable institutions are many collections, and especially from those under imperial patronage. In addition to samples of work are models, charts, statistics, and illustrations pertaining to matters educational throughout the broad realm of the tzar. These, together with everything else contained in the department of Liberal Arts, except for a few articles of special value, are to be distributed among the benevolent and other institutes of the United States.

Among the exhibits grouped in this section is that of the postal service, with life-sized figures of officials, and with mail-pouches littering the tables and floor as though cast aside by the carriers. The carriers themselves are represented in realistic fashion by models and pictures, one travelling over the snow in a reindeer sledge, another in a cumbersome horse cart, and a third mounted on a camel, with others toiling afoot through rugged mountain passes, the entire group being intended to illustrate the difficulties connected with the service and the means by which they are overcome throughout the broad realm of the Russias, covering as it does one-sixth of the land surface of the globe. The War department, in its several divisions, has also a liberal display, including plans of the military prison at St Petersburg, and of the corn granaries erected near Warsaw to be used as storehouses in case of siege. Then there are the uniforms and musical instruments of the various army corps, and books relating to the science of fortification and other branches of warfare. In charts are indicated the proportion of food elements in the daily ration of pupils of the military schools, and the stature of Moscow school children. The Pedagogic museum has models of the many ethnological types of which the population of the empire is composed,


JAPANESE FURNITURE

PAINTED STATUE, JAPAN

TERRA COTTA, DENMARK

CHINA WARE AND LANTERNS, JAPAN

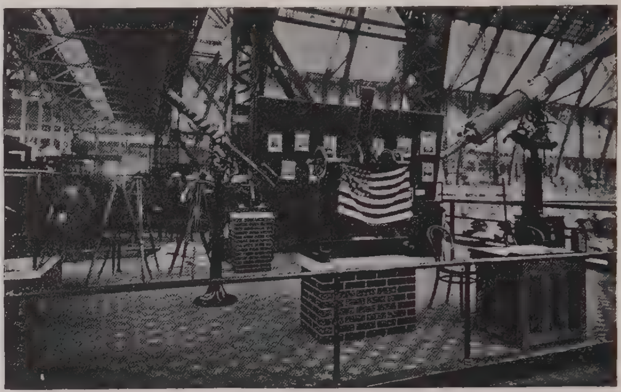
AUSTRIAN GLASS

ITALIAN SECTION

BEEF EXTRACT

with cabinets filled with minerals, skeletons, and mounted specimens of animals and birds.

ITALIAN SECTION

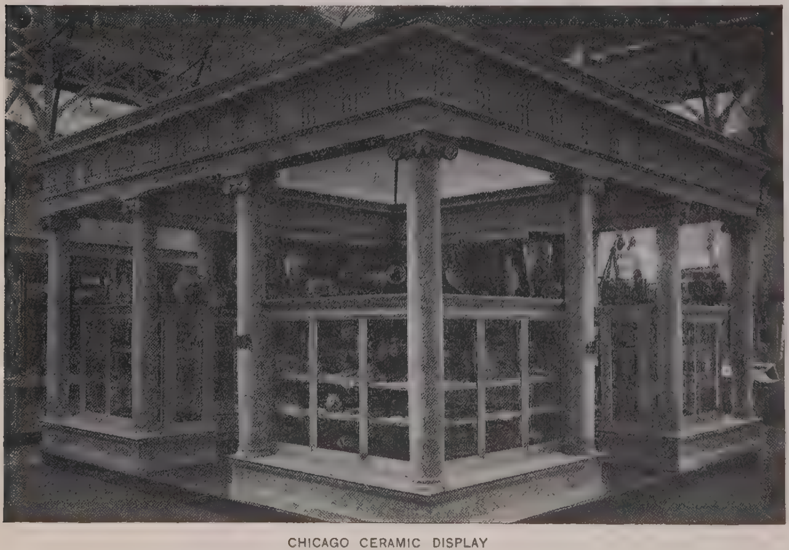


TELESCOPE EXHIBIT

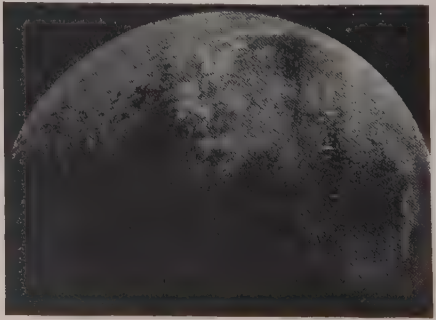
FIRST SUNLIGHT PHOTOGRAPH

SILVERWARE

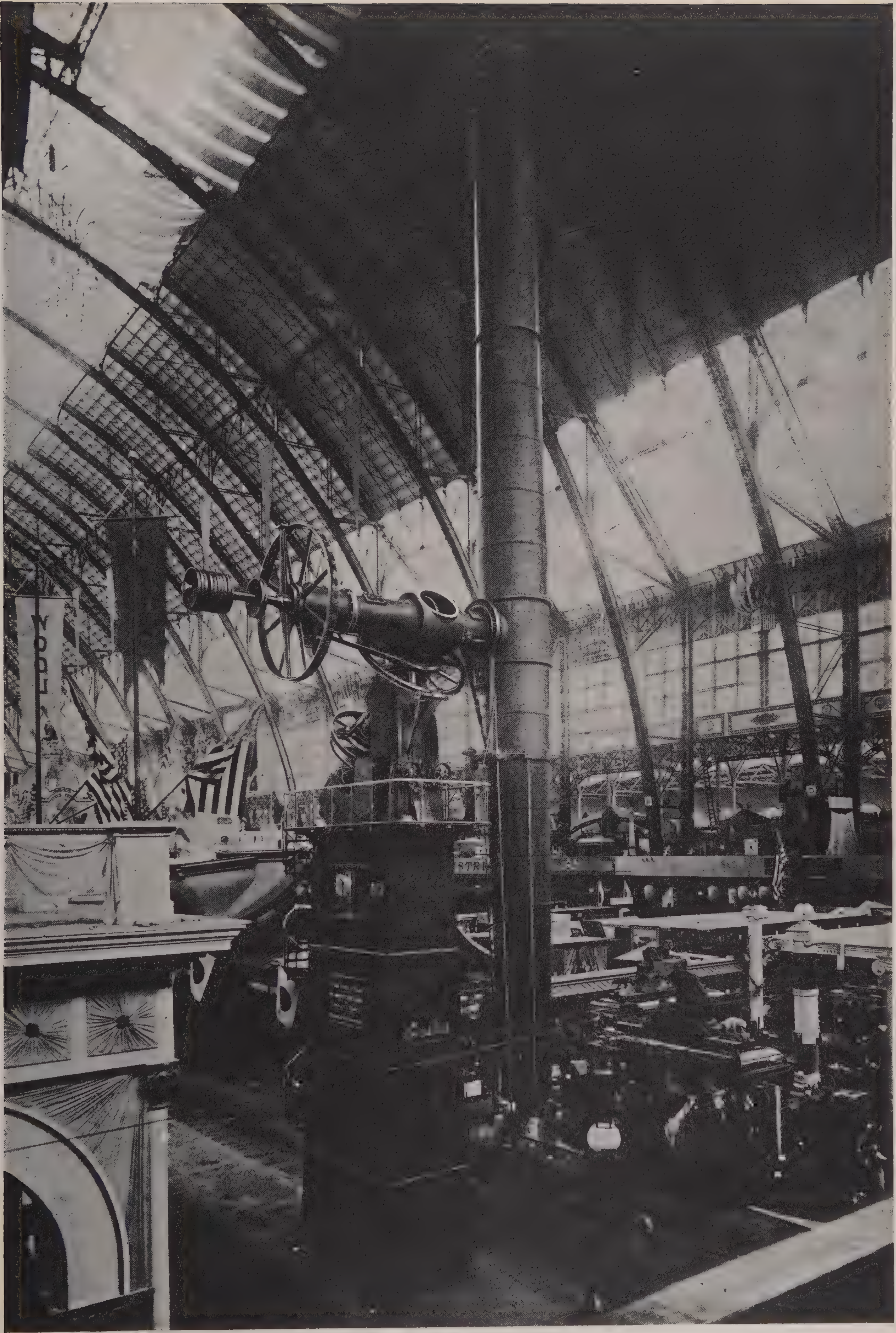
Austria has no educational exhibits, except for the models, school apparatus, and musical instruments, displayed by business firms. Italy has only a few educational publications and reports, and Belgium, a few plans and designs for school-houses, with a model of a school for basket-making, also from private firms. Denmark is represented by models, drawings, and implements from a Copenhagen society for encouraging manual labor in homes and schools, and by a method of teaching drawing to feeble-minded children. In Mexico's section, where are large transparencies of President and Mrs Diaz, are fully illustrated the improvements in her school system during the present régime. Here also is an assortment of musical instruments, and a museum stocked with the birds and animals native to our sister republic. Japan has a large and exhaustive collection, one fully explaining the organization of her public schools as developed within recent years, largely on the American plan, and with the aid of American teachers. All the workings of that system are here on exposition, from the kindergarten and primary grades to the high school and the imperial university. There are also colleges of art, engineering, technology, and agriculture, with commercial schools, and schools for the blind and mute. From many of these are specimens of work and apparatus, with diagrams or models of buildings, records, reports, regulations, and statistics. From the pupils of the government schools are many samples of needle-work; pen-drawings, crayons, and colored sketches; artificial fruits and flowers; native woods and



CHICAGO CERAMIC DISPLAY



FIRST PHOTOGRAPH OF THE MOON



THE LARGEST TELESCOPE IN THE WORLD

models in wood of buildings and bridges; decorated porcelains and other ceramic ware, and an entomological cabinet illustrating the insect life of Japan."

Considered as one comprehensive display of what has and is being accomplished the world over in the cause of education, we have in these sections by far the most complete and interesting collection that has ever been gathered together. Here may be compared the systems of countries many thousands of miles apart, the systems developed under autocratic and republican rule, denominational systems with those of the state, all grouped within a few thousand square yards of space, and yet presenting a clearer illustration of methods, appliances, and results than could be obtained from an extended tour of the world. While the entire Exposition is of itself in the nature of an educational display, the strongest factors in that display are the groups which reproduce in miniature what the world has to show us in the art of teaching—an art, indeed, it may properly be termed, for the true pedagogue, like the poet, is born, not made.

AMERICAN TRACT SOCIETY

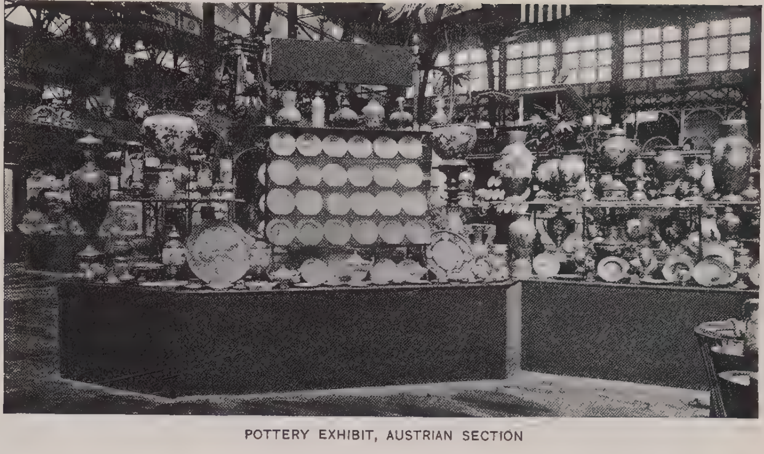
In the central section of the northern gallery is illustrated the entire domain of photography, with the reproduction of photographs and works of art, forming a collection which goes far to prove the oft repeated statement that no branch of art or science is becoming so rapidly perfected and popularized. Here are chambers filled with the most finished specimens of albertypes, aristotypes, steel engravings, wood-cuts, photo-engravings, half-tones, and wash drawings, from the large clear photograph of a locomotive at full speed, caught by the instantaneous process, to the most delicate gems of workmanship.

Except to the specialist, the display of surveying and engineering instruments, and of meteorological, optical, and astronomical apparatus is of no great interest; but in this connection is the most striking exhibit in all the department of Liberal Arts, in the form of an equatorial telescope, sixty-five feet in length, with a lens forty inches in diameter, and weighing, apart from its foundations, nearly seventy tons. In weight it is about fifty per cent and in power twenty-five per cent greater than the Lick telescope at the Mount Hamilton observatory, the gift of a California millionaire to the cause of astronomical science,

HARPER AND BROTHERS

DESIGNS IN STAINED GLASS WINDOW

NUBIAN GIRL

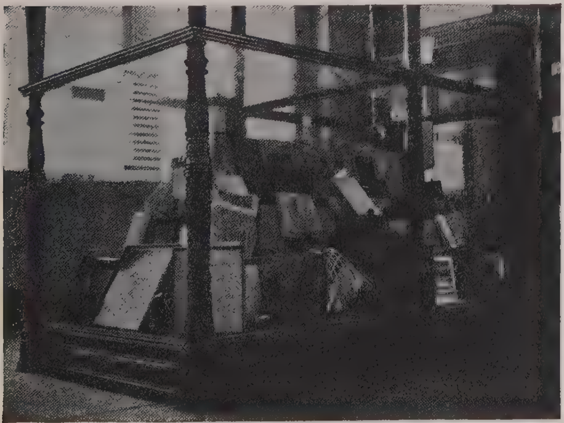

POTTERY EXHIBIT, AUSTRIAN SECTION

and with this exception the largest in the world. Yet so delicate is the workmanship and so perfectly balanced the parts, that the tube and declination axis to which it is attached, weighing together 16,000 pounds, can be moved by the pressure of a forefinger. Built by the artificers of the Lick instrument for a wealthy and public-spirited citizen of Chicago, the Yerkes telescope, located near the northern end of Columbia avenue, will find a permanent home in the Geneva observatory in connection with the university of Chicago.

Beyond the galleries of photographs, engravings, and exhibits relating to the reproduction of color or form, are the collections of United States publishers, some of them so arranged as to display not only mechanical processes, but the original sketches of artists and manuscripts of authors whose works have won for them repute. Here one may read somewhat of the history of several of the great publishing houses of the United States. Thus in the pavilion of Harper and brothers is the first book published by that firm in 1817, a translation of *Seneca's Morals*, a worn and dust-brown volume, by the side of which is a recent edition of *She Stoops to Conquer*, illustrated by Edwin A. Abbey, and the original manuscript of *Ben-Hur*.

More pictures than books are exhibited by the Century company, and of special interest is its case of Lincoln relics, including his letter accepting the nomination for the presidency, the original draft of his proclamation of 1861, calling for 75,000 troops, the proof sheets of his inaugural address, with corrections and interpolations in his own handwriting, and his message to congress in 1865, proposing compensation to slaveholders, together with portions of his correspondence with Douglas, Grant, and Jefferson Davis. In this collection is the only letter which Jefferson Davis addressed to Lincoln in his official capacity as president of the Confederate States of America. There are also casts of Lincoln's hands, and a life mask of his features, the latter taken in 1860 by a Chicago artist. In the pavilion of this company is illustrated its system of wood-engraving, and its typographic methods, the latter in a case containing proof-sheets and page-forms of the dictionary. An interesting feature is an article written by Kennan, the Siberian traveller, and mutilated by the Russian censor of the press.

The Scribners have some rare first editions and many specimens of costly and elaborate bindings, the latter contrasting somewhat sharply with the faded yellow cover of a magazine in their collection, bearing the date of 1787—the first one published in the United States. There are many manuscripts of noted authors, some written with the pen and others with the typewriter, and more expressive than any words that Stanley could have sent are two arrows, tipped with poison, representing an episode in his


SCHOOL FOR DEAF AND DUMB

THOMAS HOPKINS GALLAUDET

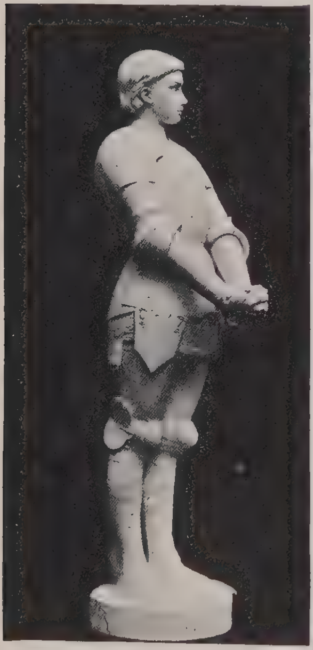
GLASS EXHIBIT, AUSTRIA

explorations of the dark continent. Houghton, Mifflin and company's pavilion is so arranged as to resemble a library, with the busts of authors appearing above their works. The Appletons' exhibit consists mainly of works of art, with a collection of reference books; by other firms juvenile literature is represented, and by a Chicago house are displayed some of the largest maps ever made, one of them printed from a single plate. In a word, every department of American literature is here represented, together with certain branches of graphic and delineative art.

Adjoining this section are exhibits which demonstrate the proselyting methods of the various religious associations. Through their publishing houses many of the churches present specimens of denominational literature, and kindred organizations explain by means of printed books, statistics, and diagrams, the workings of their systems, and the growth of their orders. The American Bible society has an especially interesting collection, including such rare biblical editions as the King James of 1611; a fac-simile of the first page of the first bible ever printed, the Mazarin, of 1450; a copy of the *Biblia Pauperum*, representing the style of printing from wooden blocks, and the *Hexapla*, showing side by side the Greek text and the six early versions of the scriptures. In the pavilion of this society one may examine copies of its special publications in 300 different languages.

ITALIAN STATUARY

Of the French exhibits on the gallery floor, in the department of Liberal Arts, forming as they do an integral portion and not a mere overflow of her display, mention has already been made. The other foreign powers represented are Great Britain and her dependencies of Canada and New South Wales, Germany, Austria, Italy, Russia, Mexico, and Japan, all of them in the western section of the gallery. Italy's pavilion is in the shape of the letter T, and over its double portal, fashioned in imitation of Carrara marble, on which are painted the royal arms, are suspended the national colors. In addition to such articles as are included in her main collection are Leghorn hats, gold-embroidered satins from Palermo, and armor from Sicily, with musical instruments from Venice, literature from Rome and Milan, and horological and other scientific instruments from all the chief municipalities, among them a clock which as its maker claims illustrates the theory of perpetual motion.



JOAN OF ARC

FRENCH BRONZE

In the exhibits of other foreign powers are illustrated their works of reproductive art, their printing processes and their improvements in surgical, medical, and scientific apparatus. The English and German picture galleries have also choice collections of photographs and engravings, loaned by art societies, with contributions from private firms and publishing houses. Japan displays, in addition to her educational exhibits already described, a number of photographs representing her modern ordnance

À LA DANCE

and arsenal, with charts, tables, and other illustrations of her postal system. In the New South Wales section is revealed her progress in manufactures and in the functional departments of government, the former showing remarkable development since the days, not long gone by, when, apart from a few saw and grist-mills, a small woolen factory for the production of coarse blankets and tweeds embodied the entire manufacturing industries of a colony with more than 300,000 square miles of area.

World's Fair Miscellany.—The Yerkes telescope, mentioned in the text, was not placed in position until several weeks after the opening of the Fair. It was not until late in December of 1892 that the contract for making this instrument was assumed by the Cleveland firm of Warner & Swasey, and it was thought that at least a year would be required for the task, the magnitude and delicacy of which it is impossible to over-estimate. The telescope was put together at the Fair, as indeed it must be; for apart from the question of transportation, to place the tube in position on its supporting columns would have required an unobstructed space equal to that of a six-story building with sixty feet of frontage.

Among the Russian exhibits in the Liberal Arts section is the Tolstoi book-case of old oak of brownish hue, with panels in the form of pictures, the design of which is burned into the wood. In one of them Tolstoi is represented at work among the peasantry on his estate; in another, busied over his manuscript and books; in a third, at rest in his garden, and on a fourth is a replica of Repin's portrait of the great Russian author. The case is filled with his novels and philosophical treatises.

BRITISH SECTION, WALL PAPER

In the American publishers' section are some interesting manuscripts in addition to such as are mentioned in the text, and of special interest to those who love to study the chirography of prominent authors. In backhanded writing, but as plain as print, are pages from the pen of Thomas Bailey Aldrich, with the bold, dashing handwriting of Henry James, the angular, feminine handwriting of W. D. Howells, the last manuscript sheet of Frank R. Stockton's romance of *The Lady or the Tiger*, and some of the copy of Frances Hodgson Burnett's story, *Little Lord Fauntleroy*. Among other specimens are the manuscripts of Mark Twain, Bret Harte, R. H. Stoddard, and E. C. Stedman, with the letter from James Russell Lowell to Joel Benton, in which the former cleared himself from the imputation of lukewarm patriotism, caused by his English proclivities. Finally, there is in this section a historic collection of dictionaries, including the first one published in the English language, compiled by John Bullocker, and bearing the date of 1616; the second, issued in 1623, and written by Henry Cockeram; Thomas Blount's dictionary of the edition of 1670; Samuel Johnson's of 1755, and the Imperial dictionary which James Ogilvie published in 1847, many of the features of which are reproduced in the Century dictionary.

FRENCH SECTION, BRONZE CANDELABRA

Prominent among the Art school exhibits in the southern gallery is that of the Chicago Art institute which, though one of the youngest, ranks among the foremost in the United States. Its efficiency is largely due to the ability and zeal of the instructors, among whom are such men as Frank Millet and Lorado Taft. The character of its exhibits is indicated in my description of the institute, in the chapter containing a brief historic sketch of Chicago. The collection from the Art students' league of New York is also a creditable display, representing, as it does, modern ideas and methods,

modelled largely on the French schools. Objection has been taken to the exhibits of the Pennsylvania academy, on the ground that they reveal too strongly the influence of French impressionists. Boston has sent some excellent studies, and there are small collections from the Minneapolis and Jacksonville schools.

In the exhibits of the university of the city of New York is one of the first telegraphic messages that ever passed over the wires, forwarded by Samuel F. B. Morse on the 24th of January, 1838, and by him and his associates recorded in the university chapel. It reads as follows: "Attention. The universe my kingdom. Right wheel." The message was dictated by Professor Thomas S. Cummings, who afterward filled the chair of art, and on whom had just been conferred a general's commission. Hence the wording which, though it may have been sent in jest, was none the less prophetic. In this section are represented the several departments of the university, including its school of pedagogy, established at the request of teachers for higher instruction in that science. To Mrs Benjamin Williamson, a member of that school, one of the advisory committee of the university, herself from the state of New Jersey, I am indebted for valuable information in this connection.

ORNAMENTAL BRONZE CLOCK

From the university of Philadelphia comes a collection of fragments of Babylonian pottery, bricks, tablets, and ornaments gathered during an expedition sent forth in 1888 under the auspices of that institution. On some of them has been deciphered the signature of Assyrian kings, and on others are strange cuneiform inscriptions, throwing light on the history and customs of the people. From the ruins of the ancient city of Nippur is an assortment covering a period of more than 3,000 years. On a fragment of an axe is an inscription of which the following is a translation: "To Bel, his Lord Nazi Meruttash Kuri Galzu has presented this axe of bright lapis lazuli,

to hear his prayer,
    to grant his supplication,
to accept his sigh,
    to preserve his life,
to lengthen his days."

Other universities and colleges have also many curiosities, only a few of which can here be described. Princeton, for instance, displays a large portrait of Washington, which for more than a century was not removed from its home in Nassau hall. The frame which contains it originally held a portrait of George II, and at the battle of Princeton the picture was destroyed by a cannon-ball, but the frame was left intact. Among other relics are a commencement programme of 1760, printed in Latin, and a number of old diplomas, one of them dated 1749, when the college was located at Newark, and signed by Aaron Burr, father of the vice-president.

In addition to the catholic exhibit mentioned in the text, many of the leading protestant denominations are represented in the educational sections of the department of Liberal Arts, among them the presbyterians, episcopalians, methodist-episcopalians, and Christian brothers.

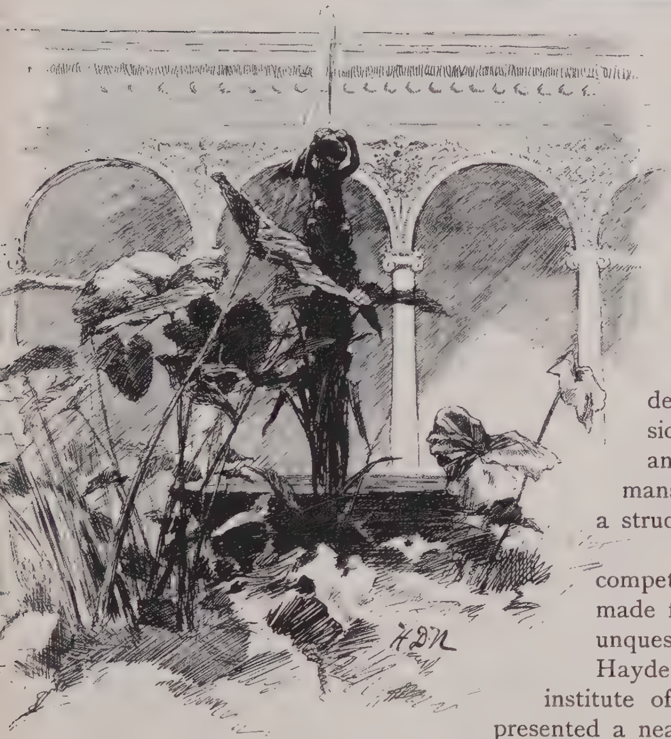
An exhibit worthy of more than a passing glance is that of the Carlisle Indian school, in the east gallery of the Liberal Arts department. In addition to specimens of penmanship, map-drawing, etc., there is a collection of uniforms, underclothing, and fancy work in glass cases, all made by the pupils, and entirely by hand, as also was a large wagon, with harness and running gear for government use.

Among the educational exhibits in the south gallery is one from the department of scientific temperance in connection with the Woman's Christian Temperance union. One of the purposes of this organization is to provide for hygienic instruction in the public schools, with special reference to the effects of alcoholic liquors and narcotics.

LA VIGNE

For the testing of musical instruments provision was made by the department of Liberal Arts, first in an adjacent building at the north end of the peristyle, where is a recital hall with seating capacity for 500 persons, and second in the spaces allotted to exhibitors, who were invited to appoint from their own number a committee to prepare a series of programmes, both for the recital hall and the musical sections of the Manufactures building. A necessary regulation was that during the time assigned to special exhibitors, other instruments in the vicinity were to be silent.

South of Fifty-seventh street, on Stony Island avenue, and adjacent to the Fair grounds, is the International Sunday School building, which is practically devoted to an exposition of the most effective methods of religious work among children, and may be classified in the department of Liberal Arts. Here are headquarters for the Sunday School workers of the United States and Canada.



CHAPTER THE ELEVENTH

WOMAN'S DEPARTMENT

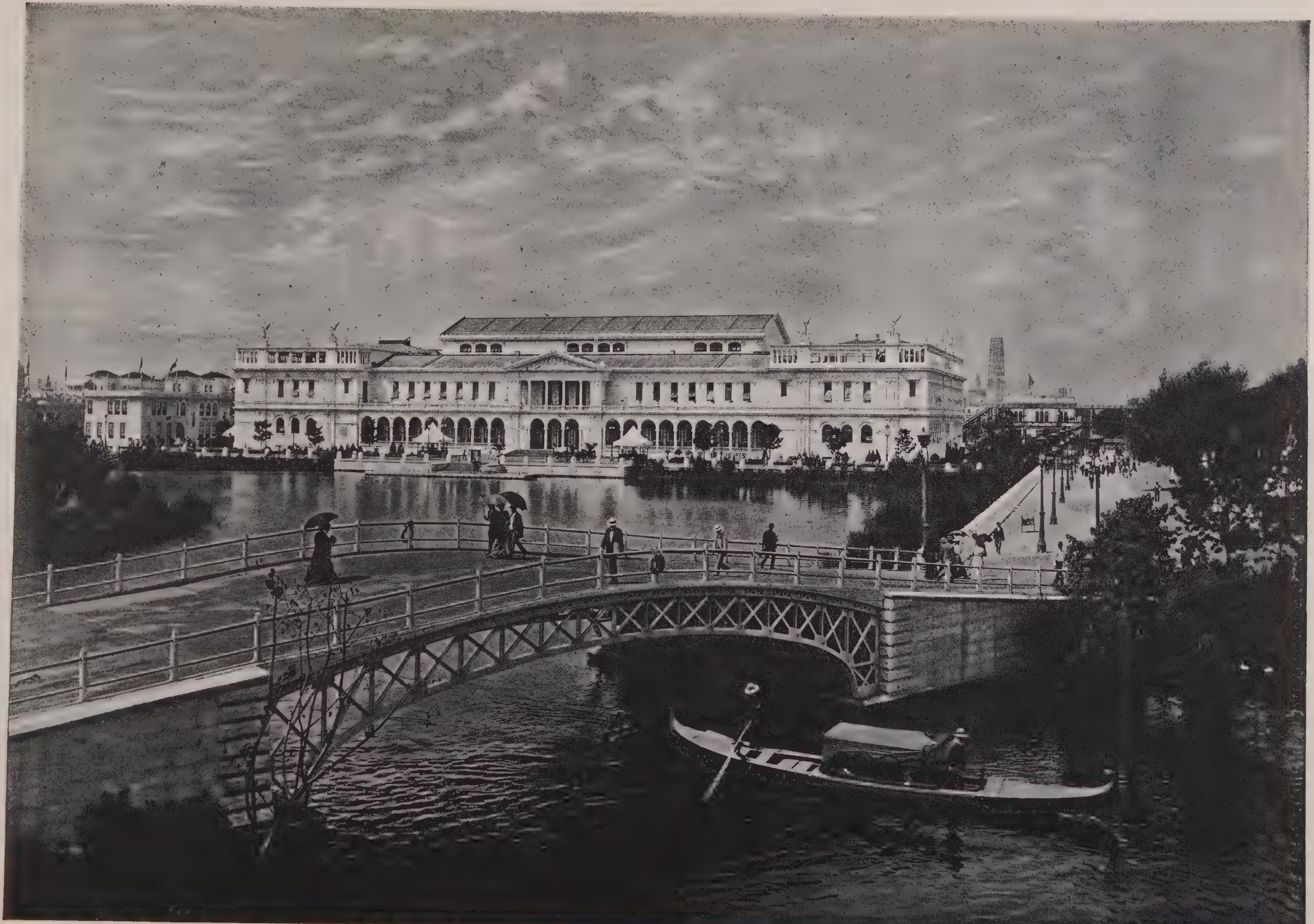
AMONG the features which distinguish the Columbian from all former international expositions are the scope and character of its Woman's department; and among the most pleasing exhibits of that department is the building which contains them. For the first time in World's Fair annals, as I have said, a special edifice has been devoted to the purposes of that department, or rather to a portion of its purposes, for, side by side, not only in the great temples of industry, but in state and foreign pavilions, are specimens of male and female workmanship. For the first time also has been designed by a woman a structure fashioned for such uses.

In the plan of this building we have the result of a national competition, but of competition only among women, the choice being made from a large number of designs, not a few of which were of unquestionable merit. The successful candidate was Sophia G. Hayden, a graduate of the architectural school of the Massachusetts institute of technology; and in the evolution of her scheme she has presented a neat and artistic solution of one of the most difficult problems of the Fair. In this building must be contained, not only a general and retrospective display of woman's work, whether in our own or foreign lands, but space must be provided for the exhibits of charitable and reformatory organizations, for a library, an assembly-room, for parlors, committee rooms, and administration and other purposes. All this must be accomplished in a space 400 feet long by half that width, adjacent to the Midway plaisance and the Horticultural hall.

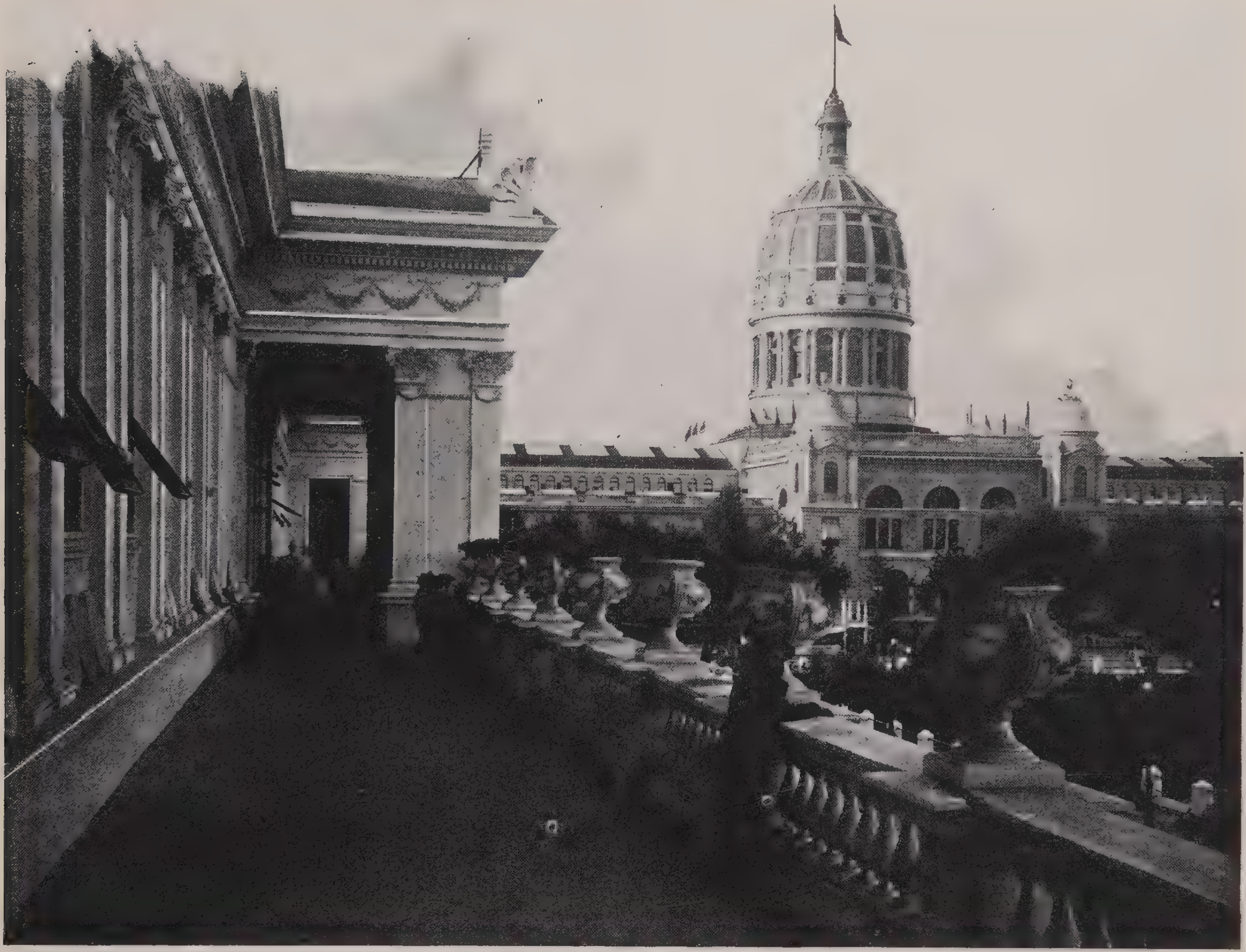
Selected for its skill of detail no less than for its grace and harmony of design, this composition is the work of a professional architect, and not, as some would have us believe, of an architectural scholar; for if Miss Hayden was before unknown to the profession, she has here given proof that she is far above amateur rank. If in her design its feminine features are somewhat pronounced, that is as it should be. As one of her brother architects observes, "It is proper that such a building should take its place with the other architectural productions in Jackson park, and it is eminently proper that the exposition of woman's work should be housed in a building in which a certain delicacy and elegance of general treatment, a smaller limit of dimension, a finer scale of detail, and a certain quality of sentiment, which might be designated in no derogatory sense as graceful timidity or gentleness, combined, however, with evident technical knowledge, at once differentiate it from its colossal neighbors, and reveal the sex of its author."

In style the building is modelled after that of the Italian renaissance,

CHARITY



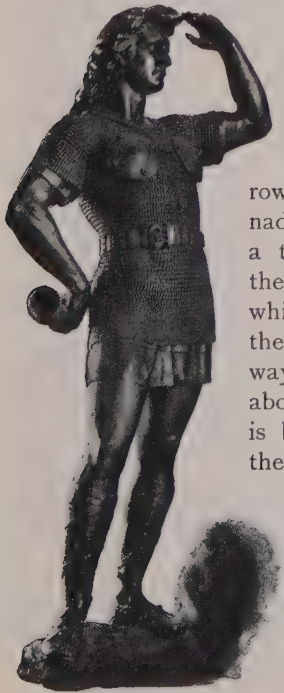
WOMAN'S BUILDING



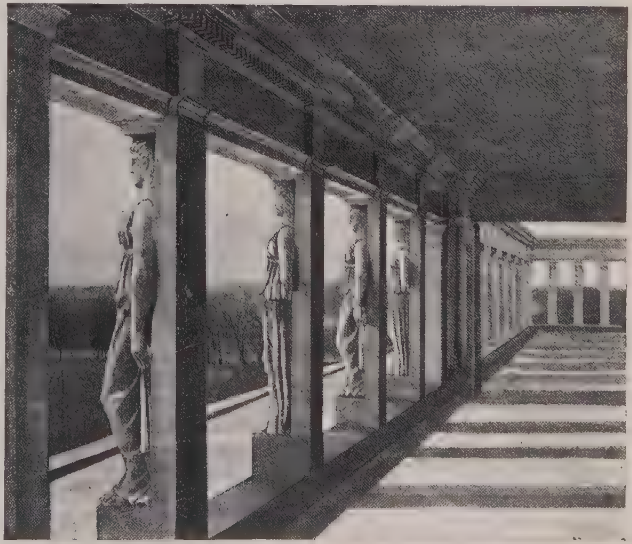
VIEW FROM BALCONY WOMAN'S BUILDING

with the façades of the first story fashioned in the form of an Italian arcade, and surrounded with a portico, the roof of which serves as a balcony for the second story. The colonnade of the upper story is suggestive of the Corinthian order, and between the columns are windowed spaces, adapted to the comparatively small dimensions of the chambers within. The principal entrance is in the form of a triple arched pavilion, flanked by a surface of solid wall, with double pilasters, above it an open colonnade of the same design as those on either side, and with the pediment richly decorated in bas-relief. In front the corner pavilions are similarly treated, as also are the side entrances, but without pediments, and with rows of pilasters in place of colonnades. Over the side entrances is a third or attic story, opening at the main roof on gardens, around which is a screen of pilasters. From the central pavilion spacious stairways lead to a terrace a few feet above the water, where a landing is built on the northern arm of the lagoon.

In the interior is a central hall opening into a rotunda, with decorated skylight, unencumbered by columns, and of sufficient altitude to admit the light from rows of clear-story windows. On both floors this open space is surrounded with



LEIF ERIKSON



UPPER PORCH

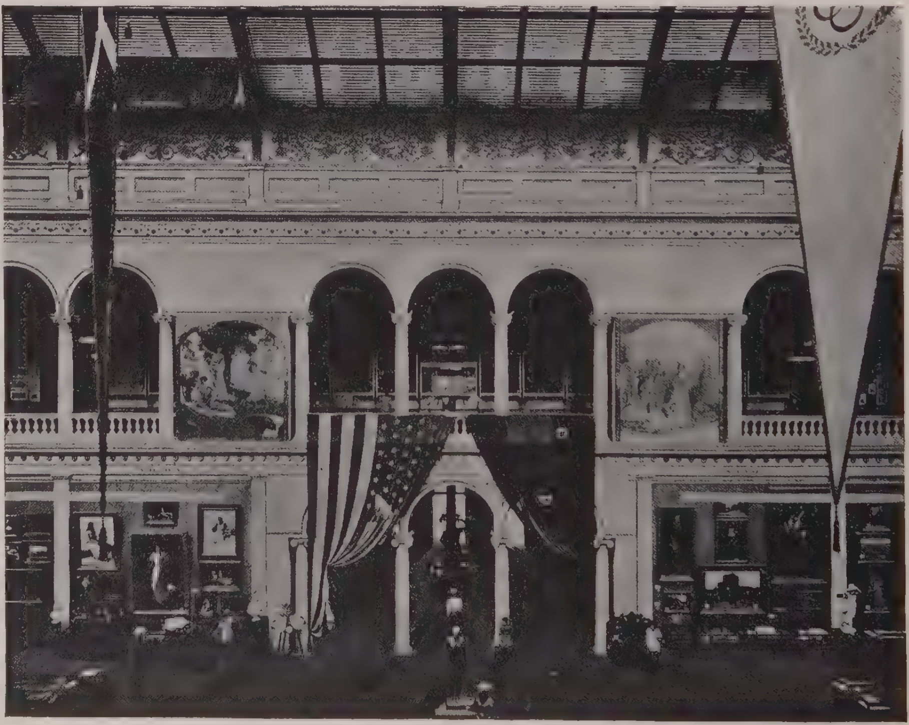
AMERICA, VINNIE REAM HOXIE

VINNIE REAM HOXIE

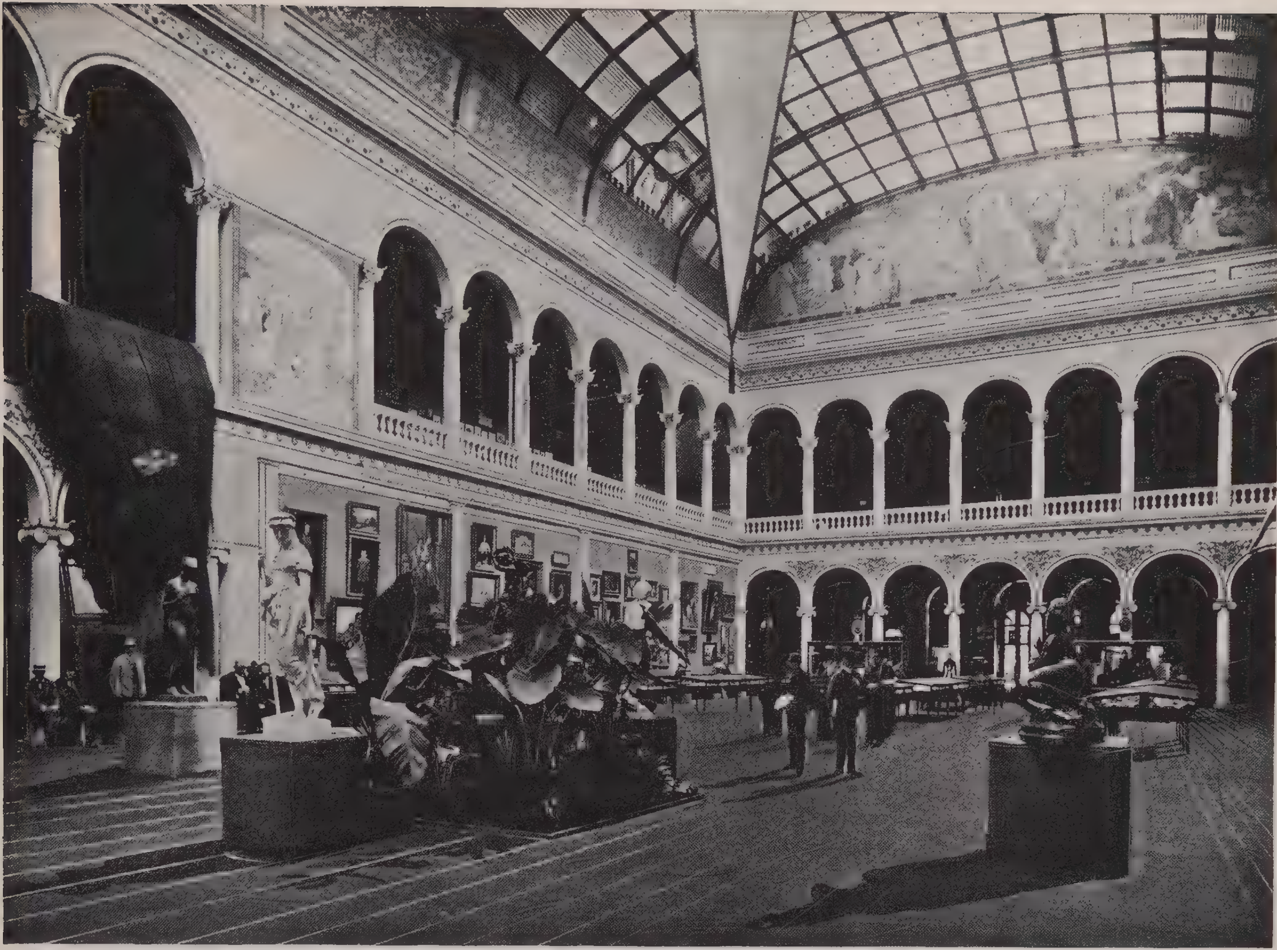
open arcades, those on the upper story serving as galleries, and resembling somewhat the corridors of an Italian courtyard. The interior plan displays the most careful economy of space in providing for suites of connected apartments, differing in size but for the most part of almost domestic proportions, and with due regard to lighting, circulation, and communication. The appearance of the building is in harmony with the conditions from which its design was evolved, suggesting rather the lyric features of the Art palace than the heroic aspect of the larger temples of industry and science, and with a grace of expression worthy of its uses and its artificer.

For the decorative as for the structural scheme of the building designs were invited among women qualified for such work throughout the United States, and after eager and close competition the prize was awarded to Alice Rideout, of San Francisco, by whom were modelled the compositions on the main pediment, and the symbolical groups of the roof-gardens. All the groups are more or less typical of the part that woman has played in the history of the world, of what has been, is, and will be her sphere of duty and influence. The mural paintings, with other ornamental features, as the carved wainscotings, screens, and balustrades, the tapestries and panels were also contributed by women, while from many of the states came offers of cabinet woods, marble and other materials in quantities larger than could be accepted, though to some was granted as a privilege the right of furnishing and decorating their own apartments and interior decorations.

On the roof are winged groups typical of feminine characteristics and virtues, all in choicest symbolism, one of the central figures representing the spirituality of woman, and at its feet a pelican, emblem of love and sacrifice. In the same group charity stands side by side with virtue, and sacrifice is further symbolized by a nun, placing her jewels on the altar. In another group is the genius of civilization, with the bird of wisdom at her feet; on the right a student, and on the left a woman groping in intellectual darkness but struggling after light. These and others, together with the figures on the pediment, typical of literature and art, of charity, beneficence, and home are from the hand of the San Francisco sculptress. On the frieze is a figure of youth, and on the panels of the entrance-ways are represented the occupations of women.



ENTRANCE

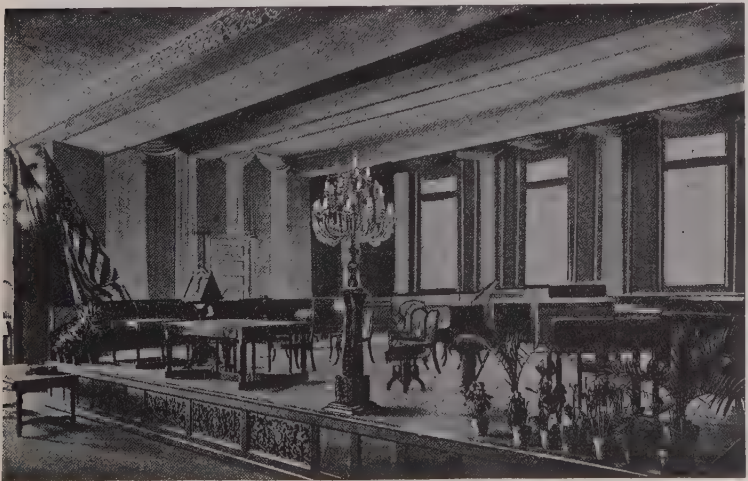


INTERIOR WOMAN'S BUILDING

To Mrs Candace Wheeler, of New York, was given the superintendence of the interior decorations, the most noteworthy of which are the paintings at either end of the rotunda, where is the court of honor. On the north tympanum, under the name of Bertha H. Palmer, primitive woman is depicted by Mrs Frederick Mac Monnies, of St Louis, the central figure representing motherhood, with women on either side sowing seed and carrying jars of water. Upon the opposite tympanum is modern woman, beneath the name of Sophia G. Hayden, typified by a group of young girls in pursuit of a figure of fame, which is disappearing in the distant blue of the heavens. A broad frieze surrounds the gallery, and between its arches are inscribed on the intervening panels the names of women whom the world has honored, from Rebecca and Ruth to the celebrities of the present day.

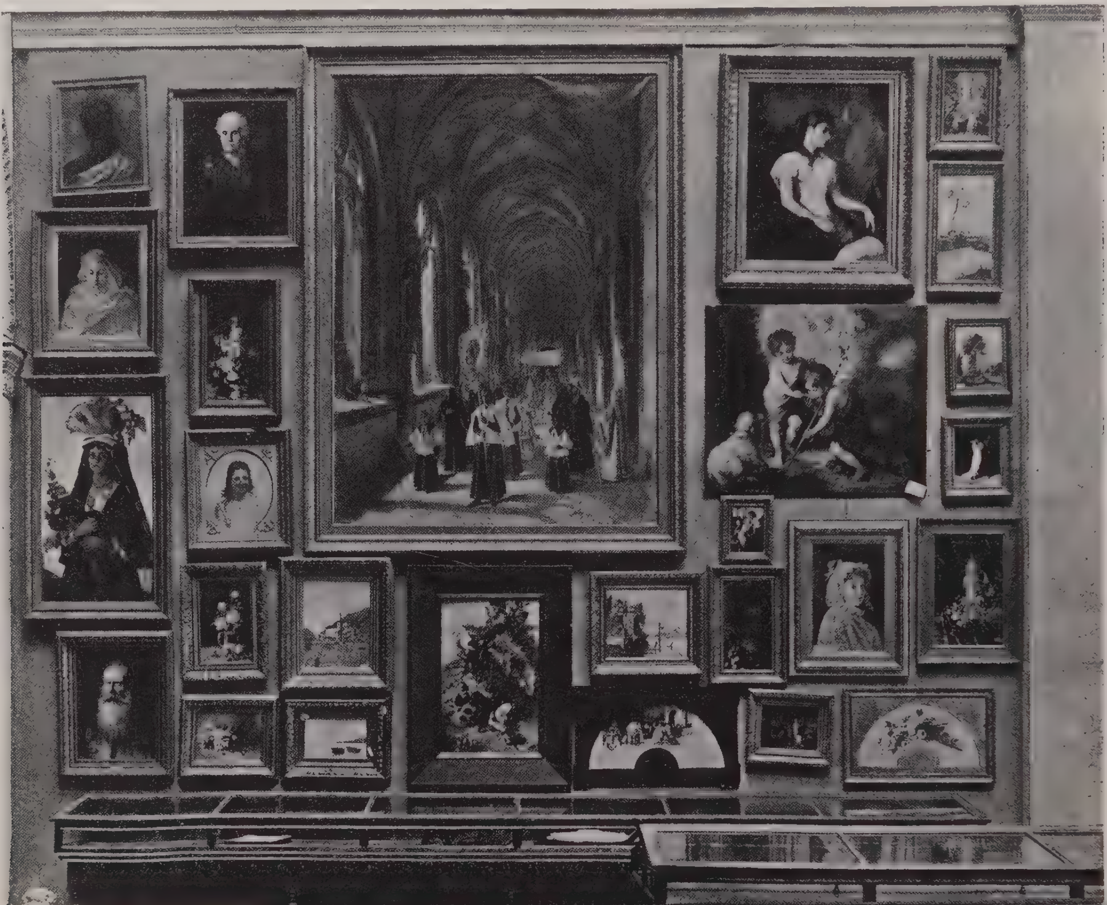
From the corridors which surround the court, on the second floor, open the various parlors, exhibition rooms, and assembly chambers. The northern end of the main hall is decorated in gold and white, its windows of stained glass adding to the effect. The central window was furnished by Massachusetts, and symbolizes

SAPPHO, BY ADELAIDE MANAN



SPEAKER'S STAND, ASSEMBLY ROOM

the part which that commonwealth has played in the advancement of woman. It is flanked by two smaller ones, presented by the women of Chelsea and Boston. The walls are covered with portraits of some of the more prominent personages in the cause of education, reform, and philanthropy. A large space is occupied by a picture of Burdett-Coutts, with models of some of her institutions, and other illustrations of her labors. The figure of Fredericka Bremer is the most prominent in the Swedish gallery. France, Norway, and the United States have also their niches of fame filled by such women as Lucretia Mott and Harriet Beecher Stowe.



PAINTINGS, MAIN FLOOR

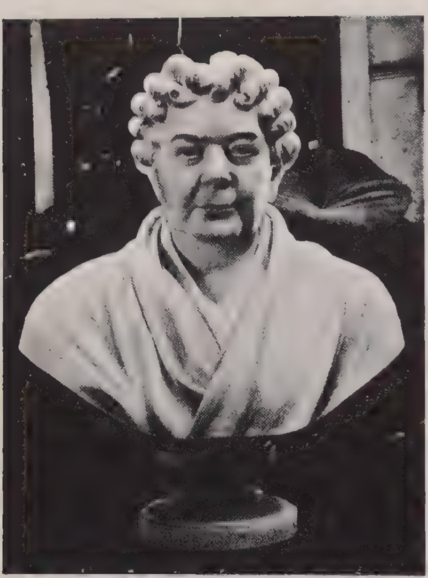
The Connecticut chamber and the woman's library open from the western corridors. In the decorations of the library is a subtle combination of colors, the ceiling, painted by Dora Wheeler Keith, daughter of Mrs Candace Wheeler, resembling the frescoes of some old Venetian palace, although the symbolic treatment is appropriate to the purpose. In the central oval, enclosed by a wreath of white lilies, literature is typified by a shapely woman, science by a man in scholastic garb, and imagination by an angel with outstretched wings. Between this oval and the Venetian border which encloses the ceiling, are loops and folds of drapery in softly blended hues representing the tints of sky and landscape, and at the four corners are medallions symbolic of history, romance, poetry, and the drama.

The small but tastefully furnished and decorated parlor occupied by the women of Connecticut is hung with pictures from the hands of the daughters of that state, and in addition to its other purposes serves as a reception room for the commissioners of foreign countries. Into the eastern corridor open the reception rooms occupied by the state boards, and by the women of California, Ohio, and Kentucky. Though intended for residents of those states, the parlors are open to the public, as examples of decorative art. The California department has been called the cactus room, from the fact that its coloring and decorative scheme are largely in imitation of that plant. Mrs Frona Eunice Wait, the commissioner from California, was the originator of the idea, and carried on the actual work. A pleasing effect is produced by the grayish green of the cactus, as seen in the glass windows and draperies, and the warm, rich hues of the polished redwood floor, the panelled ceiling and walls. The furniture of native woods is ornamented with similar designs, as are the carvings on the panel frames of ceiling and walls. On one side is a large mirror, and above it a panel of redwood, upon which is the shield of the state elaborately carved. The floor is partially covered by the skin of a grizzly bear from Humboldt county, and on the panels of the walls are pictures by prominent California artists, representing the flora of the state, and such scenes as the old San Francisco mission, the Cliff house, Mount Hamilton, Lake Tahoe, and Mount Shasta. Busts of native Californians are placed on pedestals of native onyx and marble; some of the draperies are of home-made silk, and there are vases fashioned by members of the Ceramic club of San Francisco, with other specimens representing the arts and industries of the golden state.

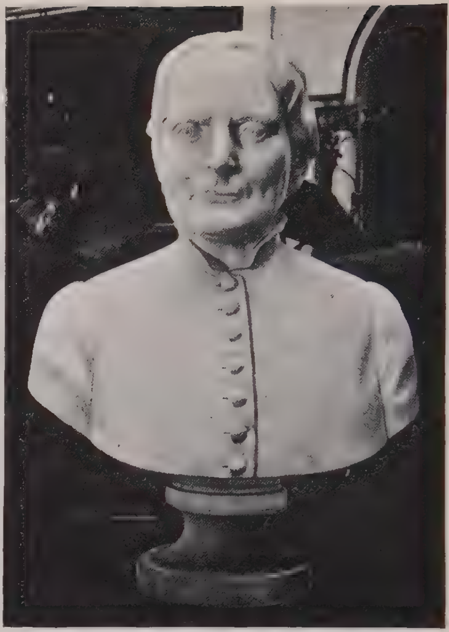
PRIMITIVE WOMAN, DECORATION OF SOUTH TYMPANUM

MODERN WOMAN, DECORATION OF NORTH TYMPANUM

The largest of the suite is Cincinnati's parlor, the decoration of which was in charge of Agnes Pitman, of that city, daughter of Benjamin Pitman, who for years has been identified with its academy of design. Under the direction of her father Miss Pitman carved the first table thus decorated by a woman in Cincinnati, and here exhibited as a curiosity. Wood-carving is now a popular branch of industrial art among her women, and beautiful specimens of their handiwork are to be seen in the ceiling and in the furniture of the apartment. Around it is a frieze of floral design, shading from a pale cream color to a dark brown tint, and beneath the frieze is a border of buckeye leaves and blossoms, with tasteful mural designs. In a case near the centre of the room are specimens of Rookwood and other pottery from the women of Cincinnati. Over the door is a group named The Jury, representing in ceramic work a cluster of owls; and among the statuary may be mentioned a marble



ELIZABETH CADY STANTON



DR C B WINSLOW

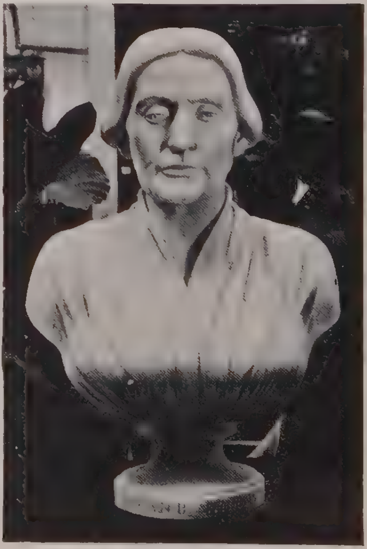
figure of Ariadne, and a statuette of Evangeline in terra cotta.

Kentucky's room is called the colonial parlor, its ceiling divided by massive beams, the supporting columns of which are entwined with sprays of wild roses. The mirrored windows and the old fashioned fireplace are in keeping with the general design, the brass andirons being loaned by a member of the family of Cassius M. Clay. By other old and prominent families was contributed most of the antique furniture, including a sofa which was the property of President Tyler, and a chair used by Elder Brewster, of Plymouth colony, more than three centuries ago. There are portraits of comely women on these walls of white and gold, and there is statuary by the artificer of the caryatides on the Woman's building, with tasteful specimens of ceramic work.

LUCRETIA MOTT

SILVER CANDELABRA

In the extreme southeast corner of the second floor, near the so-called organization room, is the office of the president, Mrs Potter Palmer, commonly termed the fish-net room, with seines festooned from the ceilings, a casting net forming a canopy over the president's desk, and figures representing women engaged in making eel pots, nets, baskets, and other articles connected with the fisheries. For this collection there was no place in the Fisheries or other buildings, and here through the efforts of the president and lady commissioners, and of delegates from several of the states was found for it a suitable home with adequate representation. Among the decorations is a water-color painting of New Jersey's seacoast birds by Hardenburg with designs in fish-scales, and specimens from women taxidermists. By Mrs Williamson, secretary of the State Charities Aid association of New Jersey, and a member of the school of pedagogy in connection with the university of New York, was originated the decorative scheme of this chamber, and to her is largely due its unique and tasteful equipment.



SUSAN B. ANTHONY

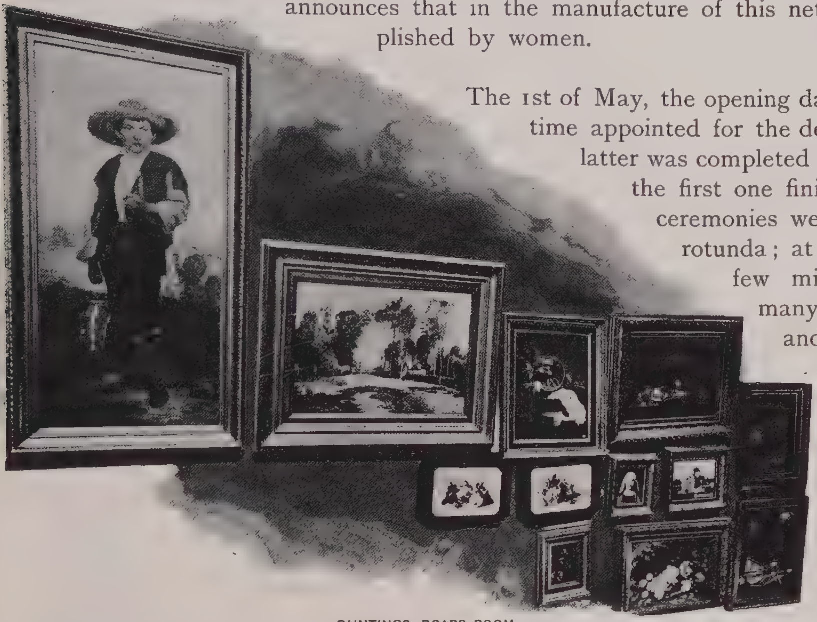
The women of New Jersey supplied the antique colonial furniture, including tables, chairs, sofas, and a piano in use as early as 1750, some of them valuable relics of the colonial and earlier republican eras contributed by the oldest families of Salem county, New Jersey. Of such relics, in which the county is exceptionally rich, there are catalogues in the president's office prepared at the request of the Board of Lady Managers by Miss Anna Hunter Van Meter, chairman of the county committee on antiques.

Opening on the eastern corridor is the chamber set apart for the headquarters of the several state boards, with its dainty screens, embroideries, and mural decorations

WALL OF BOARD ROOM

CORNER IN BOARD ROOM

from the hands of female artists of Kyoto, Japan. Special features are the ornamentations of the ceiling, with paintings on silk, and the panels fashioned of bamboo frames. Diagonally opposite the president's room is the model kitchen and the audience hall, the latter also festooned with netting. A placard on the wall announces that in the manufacture of this netting ninety per cent of the work was accomplished by women.



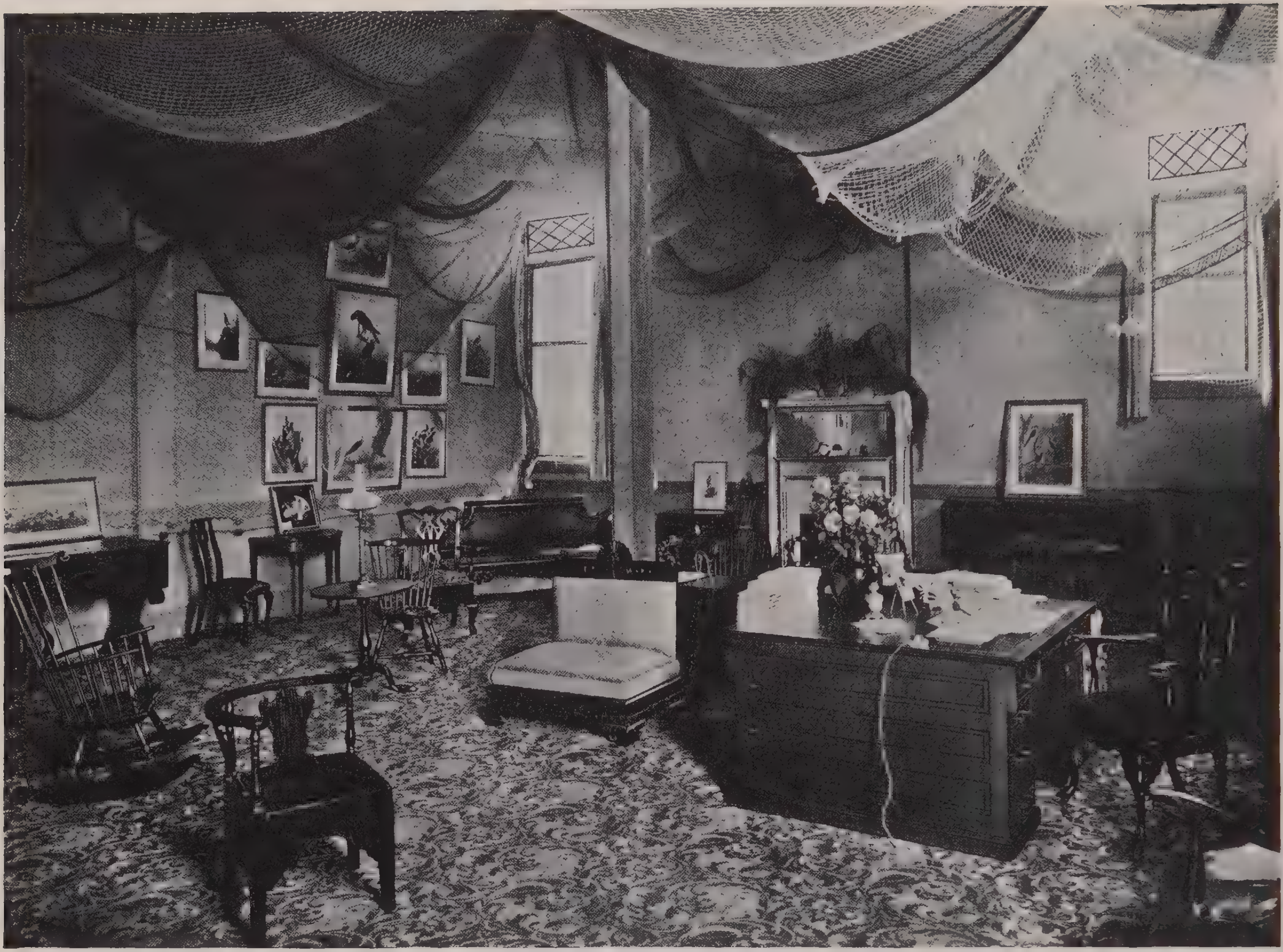
PAINTINGS, BOARD ROOM

The 1st of May, the opening day of the Columbian Exposition, was also the time appointed for the dedication of the Woman's edifice, though the latter was completed long before that date, and as I have said was the first one finished of all the department buildings. The ceremonies were held in the court of honor, the hall of the rotunda; at two o'clock the doors were opened, and a few minutes later every chair was occupied, with many hundreds crowding the passage ways, and many thousands who could find neither seats nor standing room. On the platform, in front of which the Spanish colors, flanked by those of other powers, drooped from the gallery overhead, were the Lady Managers and their invited guests, among whom the presence of some of the most prominent women of the time, including Lady Aberdeen, the duchess of Sutherland, the countess of Craven, the duchess of Veragua, the Russian princess Schalovsky, and the Swedish baroness Thomburg-Rappe, with a goodly representation from our own and other lands, attested the world wide interest in the Woman's department.

By way of overture was rendered the grand march of Jean Ingeberg von Bronsart, followed by prayer from Miss Ida Hultin, after which came another musical number, composed by the English musician, Frances Ellicott. Then to the front of the platform stepped the daughter of Professor Wilkinson, of the University of Chicago, by whom was written and read the dedication ode, its theme a tribute to Isabella of Spain, less as a sovereign than as a woman. The dedicatory address was delivered by Mrs Potter Palmer, whose impressive description of the sphere, rights, and duties of women

BOARD ROOM

SOPHIA G. HAYDEN

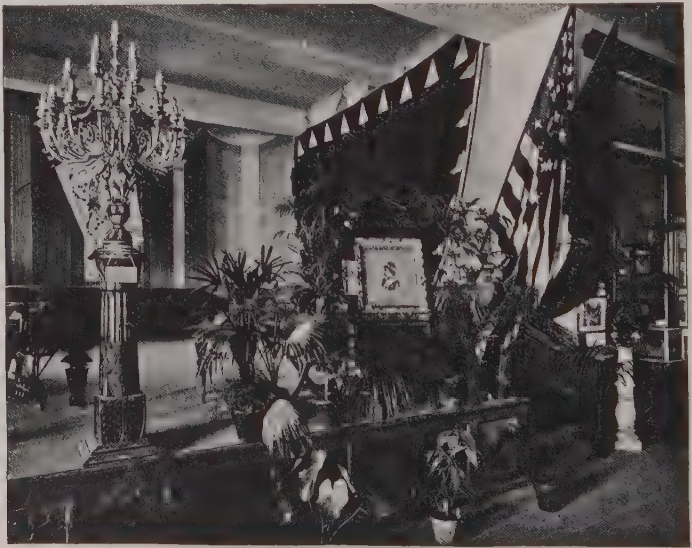


MRS POTTER PALMER'S ROOM

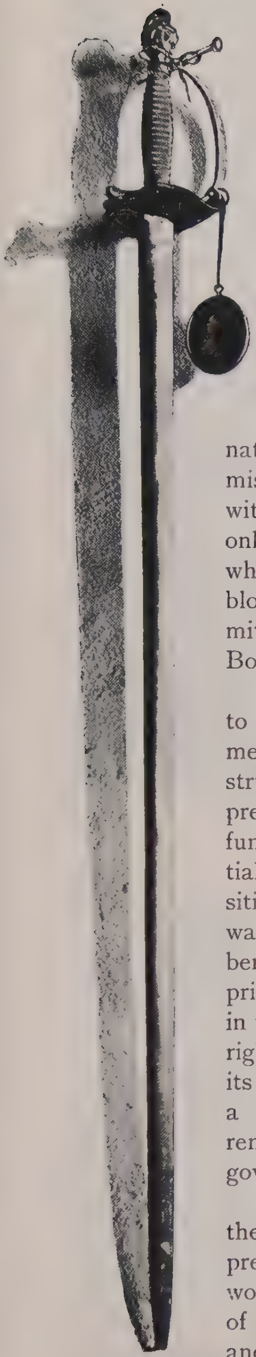
concluded with a graceful acknowledgment of the kindly and earnest coöperation of foreign nations. Then shorter addresses, with greetings, were offered by foreign participants, Italy being represented by Madame Marietta; Great Britain by Lady Aberdeen and the well-known philanthropist, Mrs Fenwick Bedford; Germany by a lady professor who repeated the words of her empress, and Russia by the princess Schalovsky, who begged that in thought at least her countrywomen might clasp hands with their American sisters. The ceremonies ended with the presentation to Mrs Potter Palmer, first of a silver crown, fashioned as a laurel wreath, and then of a golden nail, the gift of the women of Montana, which, when driven home into the place prepared for it, gave the finishing touch to the building. Finally the tones of the benediction proclaimed the opening of a department planned and created by woman's effort, and filled with woman's work.

As with the Woman's building so with the exhibits by women, they form of themselves a unique and distinctive feature of the Exposition, such as never before was presented to the world, such as never before was attempted. Not as at the

ANTIQUE FURNITURE IN MRS PALMER'S ROOM



CORNER IN ASSEMBLY ROOM



LAFAYETTE'S SWORD

international fairs held in London, in Paris, and Vienna, have these collective specimens of woman's industry and art been cast into such nooks and corners as might be spared by the several departments. For the first time they were housed in a home of their own, in one of the most beautiful homes among all these palatial groups, or in the larger buildings were arrayed in open competition with the workmanship of men. At the Philadelphia Exposition, it is true, and also at the Cotton Centenary Exposition held a few years later at New Orleans, there were comprehensive exhibits of woman's work that more than merited the attention they received; but here we have not a mere adjunct of the Fair but an integral and most interesting portion of it, one recognized by the national legislature, approved by the commission constituted by that legislature, and with the earnest and cordial support, not only of our own but of European nations, whose titled dames, even those of royal blood, did not disdain to serve on committees acting in coöperation with the Board of Lady Managers.

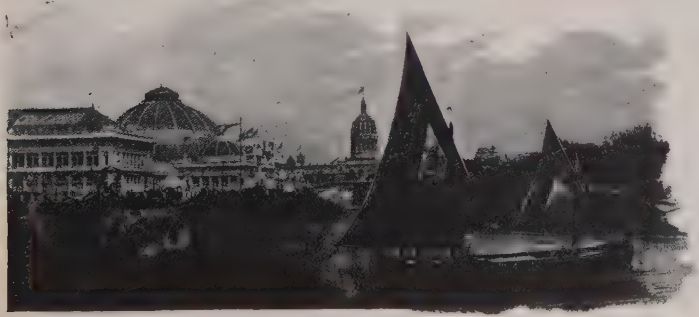
ANTIQUE FURNITURE

A PIANO OF 1750

In the act of congress which gave to the Fair the sanction of our government, the National Commission was instructed, as we have seen, to appoint and prescribe the duties of this board, whose functions and operations have been partially described in connection with Exposition management. Among those functions was the selection of "one or more members of all committees authorized to award prizes for exhibits which may be produced in whole or in part by female labor." Thus was conceded to woman, not as a favor, but as a right, such representation in the control of affairs as enabled the board to present to us, in all its symmetry of design and perfection of detail, their Woman's department. Here was in truth a most proper, a most significant concession, and as the president of the board has well remarked, "Even more important than the discovery of Columbus was the fact that the general government has discovered woman."

To the more thoughtful class of visitors one of the most interesting exhibits contained in the Woman's building is that which represents in the form of a retrospective collection, from prehistoric eras to the age in which we live, the contributions made by women to the huge workshop of which this world so largely consists, their contributions not only to the industries of the world but to its sciences and arts. Thus it is hoped in a measure to dispel the prejudices and misconceptions, to remove the vexatious restrictions and limitations which for centuries have held enthralled the sex.

In their preliminary announcement, the managers thus outline the purpose of these exhibits: "It will be shown that women, among all the primitive peoples, were the originators of most of the industrial arts, and that it was not until these became lucrative that they were appropriated by men, and women pushed aside. While man, the protector, was engaged in fighting or the chase, woman constructed the rude semblance of a home. She dressed and cooked the game, and later ground the grain between the stones, and prepared it for bread. She cured and dressed the skins of animals, and fashioned them awkwardly into garments. Impelled by the necessity for its use, she invented the needle, and twisted the fibres of plants into thread. She invented the shuttle, and used it in weaving textile fabrics, in which were often mingled feathers, wool, and down, which contributed to the beauty and warmth of the fabric. She was the first potter, and molded clay into jars and other utensils for domestic purposes,



BARONESS BURDETT-COUTTS

COUNTESS DI BRAZZA

DUCHESS DE VERAGUA

MRS JOHN J. BAGLEY

PRINCESS SHAHOVSKY

LADY ABERDEEN

MRS FRANCIS B. CLARK

MRS BENJAMIN WILLIAMSON

MRS FRENCH-SHELDON

MME DUPUY DE LOME

MRS RALPH TRAUTMANN

MRS PRESIDENT DIAZ

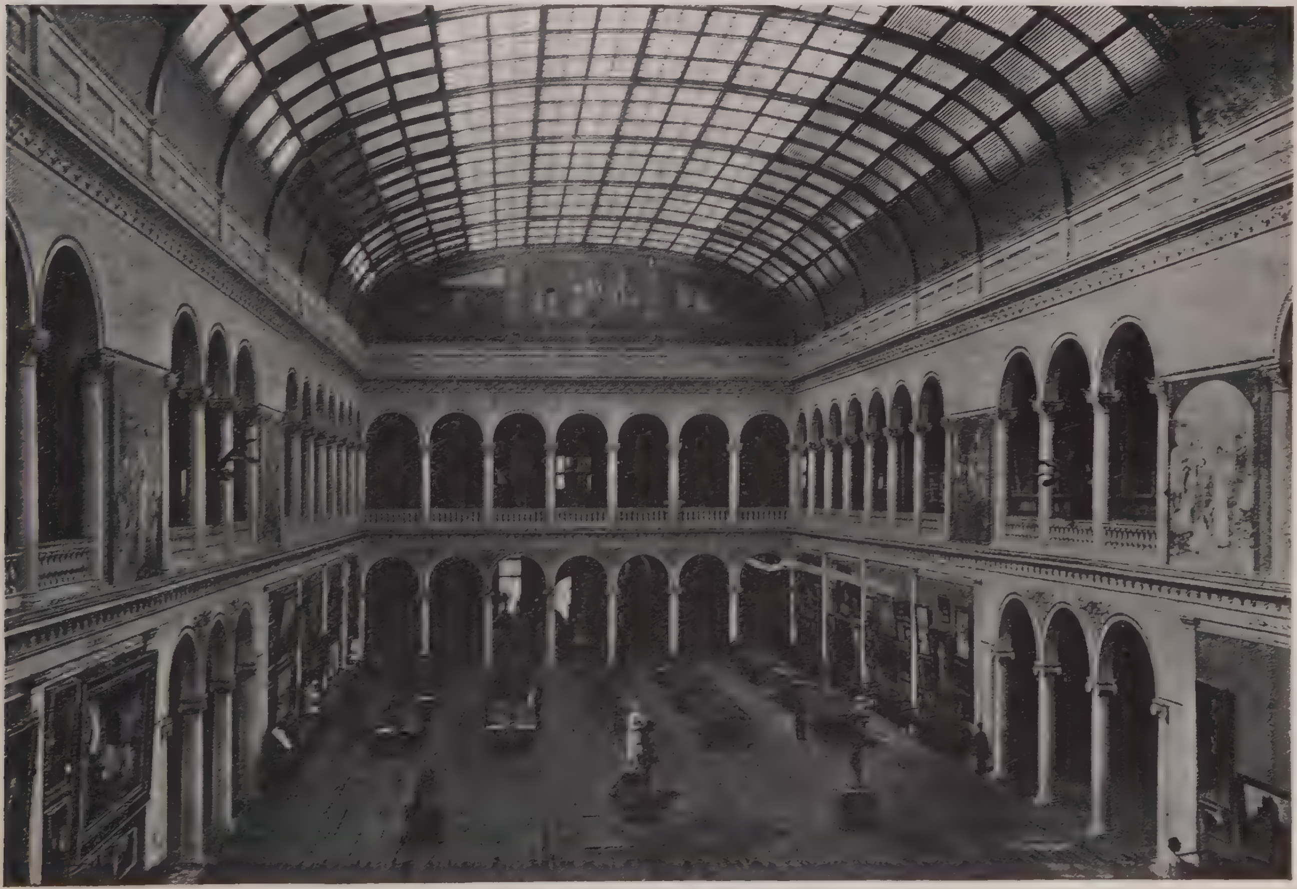
MODEL KITCHEN

drying them in the sun. She originated basket-making, and invented such an infinite variety of beautiful forms and decorations as put to shame modern products. She learned to ornament these articles of primitive construction by weaving in feathers of birds, by a very skilful embroidery of porcupine quills and vegetable fibres, and by the use of vegetable dyes. Especial attention will be called to these early inventions of women by means of an ethnological display to be made in the Woman's building, which will supplement the race exhibit to be made in the department of Ethnology."

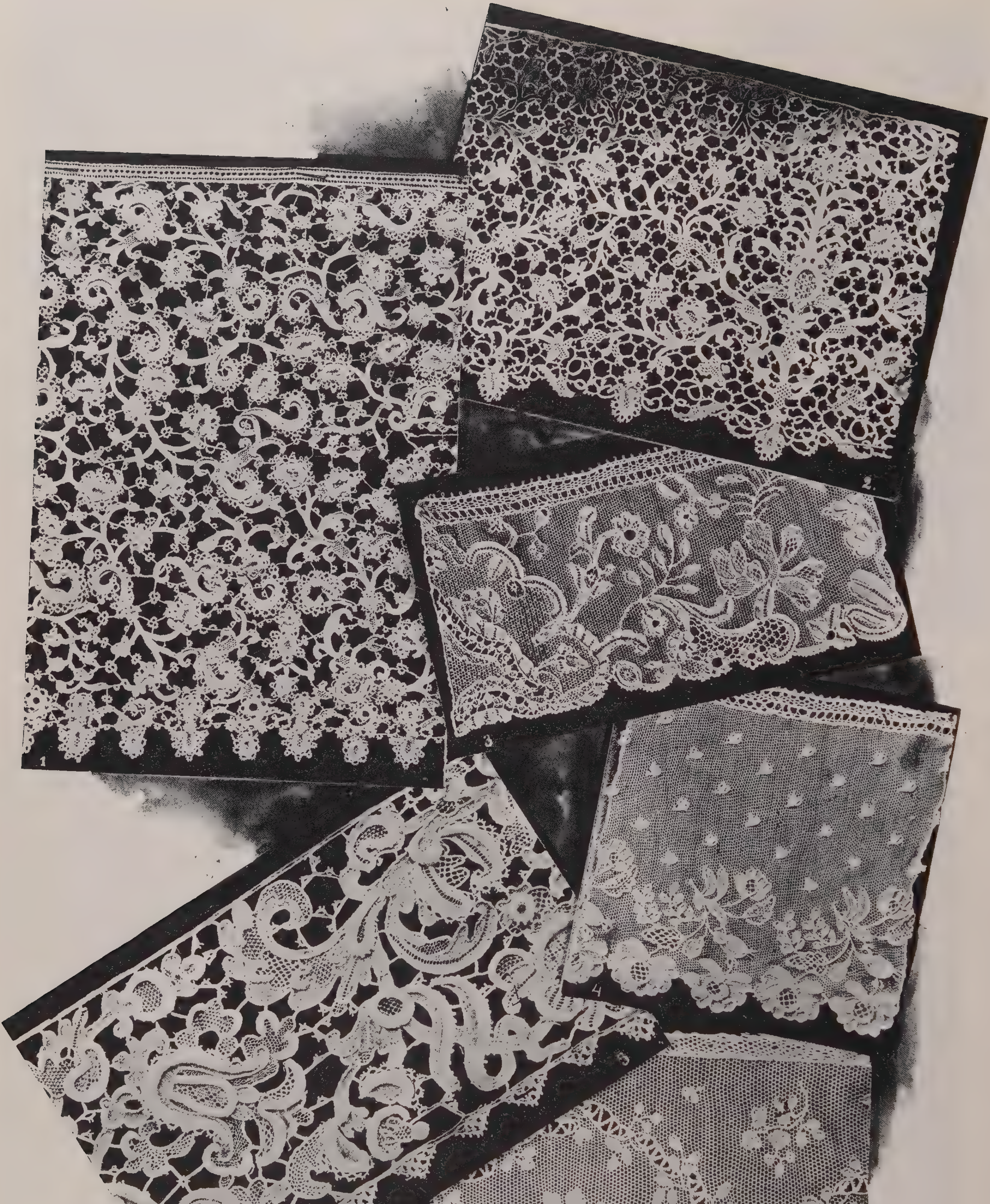
To present, in some branches of manufacture, an entirely distinct collection of woman's work, would have been an impossible task, for who shall tell, for instance, in a piece of cloth, what part of the weft was woven by men and what by women, who may have worked side by side in fashioning the completed fabric? But, as I have said, in the Woman's department the decorations and exhibits of whatever kind are the work of woman's hands. As originally planned the building was to be used only for administrative purposes and assembly-rooms; but although feminine industries were largely represented in all the departments, as the work of organization progressed it became evident that many would be entirely excluded were not additional space provided. Thus it was that the Woman's building was so largely devoted to exposition purposes.

TEMPERANCE PUBLISHING ASSOCIATION

As to the distribution of woman's work in other departments of the Exposition, Mrs Palmer remarks: "In the department of charities and corrections, for instance, and also hospitals, many of the most important exhibits are from women, and we have gladly relinquished them in our building in order that they might be well represented in the Liberal Arts department.



COURT OF HONOR, WOMAN'S BUILDING



ITALIAN LACES

QUEEN OF ITALY'S POINT D'ARGENTAN

In the Fine Arts building also many of the best pictures by women are shown, as the space we could give them was extremely limited. In the department of Transportation twelve per cent of the exhibits are by women. In Horticulture forty-six per cent, and in Fisheries twenty-six per cent. We have also a fine showing in the department of Ethnology, and, it is useless to add, in the department of Manufactures, where woman's work would naturally appear to great advantage."

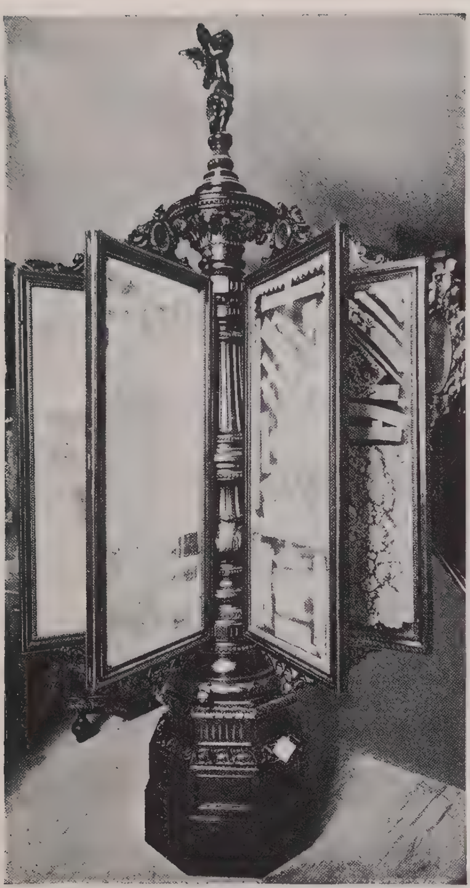
ITALIAN LACES

Passing through the main eastern portal, the visitor enters a large vestibule decorated by English artists. Philanthropy is represented in the person of Florence Nightingale ministering to sick and wounded patients in her hospital. On either side of her figure are symbolic paintings, and on the opposite wall is a central group typical of artistic needle-work.

Turning to the left we enter the suite of rooms, containing the ethnological groups and those which demonstrate the practical ingenuity of woman. The collection from the Smithsonian institution is at the entrance to this section, and is mainly illustrative of woman's work among the native races of the western continents. In a gallery of portraits are shown the various types of Indian women in North and South America. There are cases filled with costumes, needle-work, utensils, bodkins, tools, baskets, pottery, netting, and the like. There are primitive shuttles, distaffs, and looms, made of reeds and rough wood, samples of skins dressed by Eskimo and other Indians, tapa cloth from Polynesia, matting from Africa, and blankets from the Navajos of the southwest.

In one of the landings on the southwestern staircase, the work of manufacture is shown in actual operation, in a booth fashioned of the products of a loom manipulated by a Navajo woman of Colorado.

MRS CANDACE WHEELER



ITALIAN LACES

CENTENNIAL EXPOSITION SOUVENIR

In the exhibit of the Smithsonian institute one of the most remarkable evidences of skill among semi-savage women is also from Navajo looms, and some of the basket-work made by North American Indians is so closely woven that it will hold water. Montana and Utah have special displays, Skull valley being the locality represented in the latter territory. Among the Smithsonian specimens illustrative of woman's work is the exhibit of laces and kindred fabrics, including a thousand samples, so arranged as to represent different periods of manufacture. Those selected prior to 1550 are merely knotted net, darned, and cut work. Then come point, bobbin, Venetian, Milanese, Genoese, and Flemish laces, with those peculiar to France and England, all the schools being represented in this assortment, which was loaned by Thomas Wilson, of the national museum.

By Mrs French-Sheldon, who travelled through eastern Africa at the head of a large caravan, unattended by any of her sex, were placed in the ethnological section many curios collected during her expedition. Among them are spears, great and small; knives finely tempered in charcoal fires; beads of brass, copper, and iron, and various utensils made of gourds, traced with heated wires in Persian and Arabesque designs. The last are copied mainly from articles obtained at the bazaars held by the Arabs of the coast. There are also curios presented to Mrs French-Sheldon by Frederick Taylor, of New York, procured while travelling in Madagascar; including colored silks, the white caps of the Hova soldiery, and other samples from the more intelligent portion of the population. From the warlike Sakalavas, a tribe of fierce and swarthy savages living apart from settled communities, were procured two of their hideous war-masks, made of perforated terra cotta, fastened with fibres of the palm, and to which are appended long beards of goats' hair.

From the ethnological section we enter an apartment which contains the inventions and patents of women; and here is sufficient evidence that aside from purely feminine industries women are applying themselves to pursuits of practical utility. Among their inventions are weaving and washing machines, refrigerators, dusters, flour sifters, egg beaters, meat boilers, beef manglers, frying pans, trunks, and apparatus for detaching runaway horses from vehicles, with patent surgical bandages, hot-water appliances and sanitary dinner pails and filters; all these in addition to a choice display of needle-work, ceramic ware, paintings and statuary, engravings, etchings, and photographs. Near the entrance to the educational section, north of the vestibule, is a large picture representing the wreck of a ship and the rescue of her crew, while a portion of the wall beyond is covered with charts, testimonials, patent papers, and other evidences of the general adoption of the signal system invented by Mrs Martha J. Coston more than thirty years ago. This is the only system of night signals recognized by the United States government and the British board of trade, adopted also in part by France, Italy, Denmark, Holland, and Brazil. There is probably no prominent steamship line, or life-saving station in the world which is not familiar with this patented invention of a woman. In the exhibits of the educational department are illustrated the methods of woman's training, physically, industrially, and intellectually. New York sends an array of architectural drawings, and designs for carpets, book covers, wall-paper, oil-cloth and printed textiles, the bulk of the contributions coming from the school of Applied Designs for Women, the school of Industrial Art, and

MONTANA NAIL

INVENTIONS AND PATENTS

the Pratt institute. Physical culture is represented by the Bryn Mawr school, of Baltimore, and there are many individual proofs of efficiency in the field of professional work. From Turkey comes a small collection of drawings, needle-work, and other evidences of female industry, from the American school for girls, at Scutari. The medical profession is represented by the Pennsylvania college for women, at Philadelphia, and nursing, as a profession for women, by the New York and Brooklyn training schools, and the Philadelphia hospital for nurses.

Adjoining the educational section is one in which are traced the processes in several branches of female industry, the exhibits being of a somewhat miscellaneous character. At the entrance is typified, in the form of a large Pennsylvania sheep, the shearing industry, in which thousands of women are employed. A case filled with raw silks and silken fabrics represents the work of Utah women, and their many sisters, throughout the states, engaged in the raising of cocoons. Elsewhere are portable kilns, patented by women, with various articles of pottery; and from the women of Iceland is a display of hand spun and knit woolen goods, hosiery, and gloves.

Entering the rotunda, or court of honor, the visitor sees on one side a bust sculptured by Sara Bernhardt, and on the other the reproduced fragment of an old Italian statue, while on the walls are pictures representing the best work of women in all the national schools. The body of the hall is filled with long lines of cases containing choice specimens of needle-work and ivory painting. Around the central fountain, with its border of aquatic plants, is a cluster of statuary, consisting of figures of Psyche and Maud Müller, and busts of C. B. Winslow, Susan B. Anthony, and Elizabeth Cady Stanton, with a group allegorical of the west by Vinnie Ream Hoxie, of New York, one of the pioneers among female sculptors. Near the western vestibule is also her statue of America, and this section is further beautified by several mural paintings of French artists, and by a bronze statue of

EDUCATIONAL DEPARTMENT

MEXICAN SECTION, WOMAN'S BUILDING

Leif Erikson, by Anne Whitney, the Boston sculptress. On one of the walls of the northern corridor is a shield of polished copper, and across its face a silver bow, with string of golden wire, and in raised silver letters the inscription, Silver Bow county, Montana. The shield is surrounded by a border of gold, silver, and copper, with designs of the state flower, the bitter root. Silver nails fasten the bow to the shield, which is adorned with Montana rubies and sapphires, and with medallions of copper and silver in low relief, representing various mining scenes.

Spain, France, and Germany cover the eastern walls with paintings by prominent female artists, among which may be mentioned the two French canvases named The Bath, and Jean and Jacques, both showing quaint and tender touches of child life; and The Wandering Jew, a powerful work by a German painter. Below is arranged a choice display of decorated fans, miniatures, and other articles of virtu. British-Indian and Bohemian fabrics may also be examined in a series of cases which cover a large portion of the ground floor, and many ingenious specimens of needle-work from the Bohemian Industrial museum, represent her earlier periods of national industry, under the title of Our Mothers' Work. A large area in the northern portion of the hall is occupied by the Danish exhibits, the location of which is indicated by figures of peasant women attired in national costume. The cases are filled with paintings, fine needle-work, laces, specimens of ancient silver work, and antique spinning-wheels. In one of them are the laces, embroideries, table-covers, and pictures contributed by the royal family of Denmark, with roses painted by the queen, fruit by the princess Waldemar, and from the princess royal a collection of laces and handkerchiefs. Italian, Austrian, English, United States and Mexican works occupy sections of the western walls of the rotunda, one of the largest and strongest paintings in this portion of the court being that which represents, in the British division, Eurydice sinking into Hades. The industrial arts find expression in the cases ranged along the hall, toward the south, containing, among other samples, the laces of Russia and Austria, and specimens of elaborate needle-work from the nunneries of Mexico. Among other objects of interest is the table presented by the women of New Mexico, and designed to show the mineral resources and filigree silver industry of Santa Fé and the mining district adjacent. On its face is a gold medallion of the territorial seal, with historic buildings reproduced in silver repoussé. The gold, silver, and copper, the turquoises, garnets, agates, and petrified woods of which the table is largely constructed are all of local production.

The south wing of the building and the western half of the north wing are substantially occupied by exhibits from

PRESIDENTIAL CHAIR, MEXICO

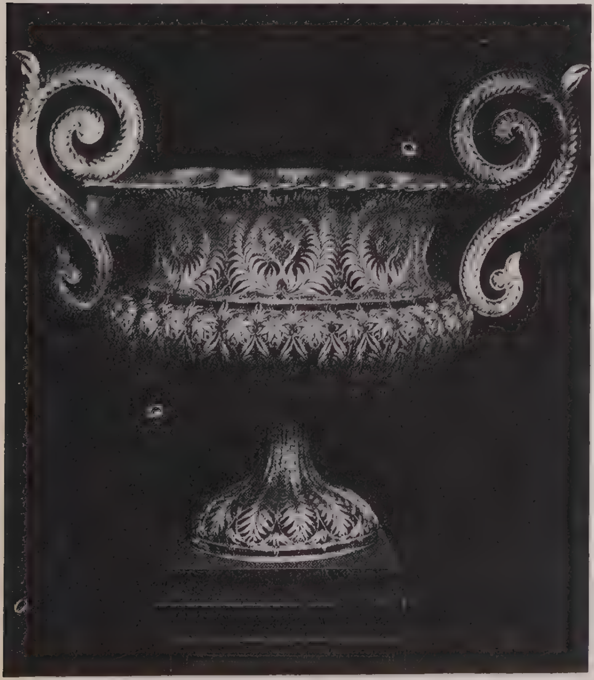
MEXICAN APRON

MEXICAN LACE

foreign countries, Great Britain, with her dependencies, filling the largest area. The embroideries, tapestries, and other articles contributed by the royal school of art needlework comprise many beautiful specimens of feminine skill, not a few of which are from the princess of Wales and her daughters. From the future queen-consort comes a chair, with carved frame of stained walnut, and seat of ornate leather work; the princess Louise sends a delicate sofa cushion of white silk, embroidered with primroses, and Maud and Victoria, piano-stools ornamented with their work in the form of dahlias, while from Queen Victoria is a rich tapestry, whose central figure represents Pomona, wrought in colors which blend like those of ripe fruit. Among the screens noticeable for their beauty is a Louis Quinze, panelled with satin, and decorated with blue bows and sprays of flowers. In the piano-covers, bed-spreads, cushions, fans, vellum book-bindings, laces, wood-carvings, and ceramic wares are illustrated the many industrial pursuits of English women, and especially such as are fostered by the societies which have their headquarters at the Kensington museum.

But the most striking exhibits in the British section are those that pertain to education. Here Girton and Newnham colleges, Cambridge, Lady Margaret and Somerville halls, Oxford, the Cheltenham Ladies' college, Queen's college, Belfast, Alexandria college, Dublin, Queen Margaret's college, Glasgow; all these and others in Great Britain for the higher education of women, are represented in a collection of photographs and reports. There is also a small gallery of the portraits of children, and appended to this collection of comely, fresh looking faces is the motto, *Non angli sed angeli.* The department of philanthropy is in charge of the baroness Burdett-Coutts, and illustrating certain phases of charitable work in England are models of a children's holiday home, a crèche connected with the Ragged School union, and a cabmen's shelter decorated by the London Flower Girls' mission.

The women of Ireland, Scotland, and Wales have organized separate exhibits. Very homelike seem the knitted underwear and bed-spreads made by the people of Wales, and quaint are the living and wax figures of Welsh spinners



MEXICAN FILIGREE WORK

SPANISH WAX FIGURES

BRITISH NEEDLE-WORK

in their tall sugar-loaf hats, such as are treasured as family heirlooms and barely considered respectable until worn on Sundays and feast-days by the women of several generations. From Scotland the women of Argyle send tartan hose, and those of Aberdeen socks, gloves, and stockings, with embroideries designed in Turkish patterns. Among antiquarian treasures is the embroidered coverlet from the bed of Patrick, earl of Kinghorn, said to have been worked in 1606, and loaned by the countess of Strathmore, with a portière from Lady Aberdeen, made in 1740 by the countess Anne. From another contributor to the historic interest of the Scottish exhibit are antique laces, curtains, embroideries, draperies, and screens, characteristic of various periods in the country's history. The oldest is a portion of a hanging in green velvet, embroidered with raised needle-work, a style popular in Scotland during the later dynasty of the Stuarts. Another interesting specimen is in the form of an Arab frieze, fashioned of pieces of cloth, leather, and tinsel, sewed upon a background of plush, the figures, thus formed in relief, representing Arab chieftains and Bedouins of the desert—men, women, and children. This also is the handiwork of a woman who learned the secret of the art while travelling in Egypt.

QUEEN OF ENGLAND'S EXHIBIT

In conjunction with the Industries association, Ireland has a neat exhibit of laces and embroidered church vestments. Among the latter are a robe ornamented with an old Celtic cross, worked by the nuns of Kenmare, and an elaborate floral design, in many colored silks, contributed by the royal school of Art Embroidery. New South Wales and Canada have also unique displays of woman's work, the former sending us, among other articles, a cow and calf modelled in wax, and covered with natural hair.

The Russian exhibits, adjoining those of Great Britain on the east, are under the immediate direction of the grand duchess Elizabeth, of Moscow, sister-in-law to the czar. They include a large display of laces and embroideries, with several collections designed to show the progress of Russian women in the practice of medicine and surgery, especially in relation to hospital service. The wives of governor generals throughout the entire empire aided in furnishing a complete representation of woman's work in Russia. Thus from the valley of the Amoor and the northern arm of the Volga, and from all the vast stretch of territory between Russian Poland and eastern Siberia, came specimens of female handicraft. Of excellent quality are the samples from the province of Kazan, including rich embroideries in silk, silver, and gold, on a groundwork of satin, linen, and leather. The native dress of peasant girls, and the court costumes characteristic of imperial dynasties,

HER MAJESTY THE QUEEN OF GREAT
AND IRELAND
AND
EMPRESS OF INDIA
BY
H.R.H. PRINCESS HELENA OF GREAT
PRINCESS CHRISTIAN OF SCHLESWIG HOLSTEIN

QUEEN OF ENGLAND'S WORK

BRITISH NEEDLE-WORK

are illustrated by models suitably attired. One of the dresses is said to have been worn by a member of the court during the reign of Ivan the Terrible, three centuries ago. There is also reproduced a convent door in Moscow, with its multitude of gilded figures, the groundwork of turquoise, and in the centre a curtain of olive-colored velvet on which are designs in antique lace.

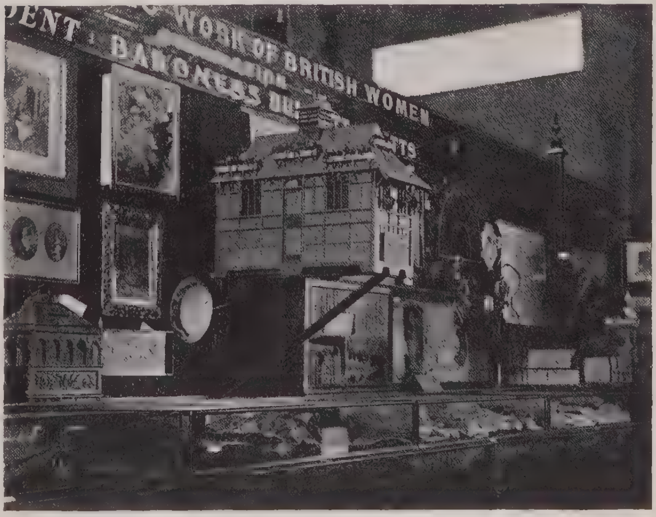
In one of the cases in this vicinity is represented a work of philanthropy undertaken by English women at the time of the Russo-Turkish war of 1877. During that war many Turkish women flocked into Constantinople, and hearing of their destitute condition, Lady Layard, wife of the British ambassador, and Baroness Burdett-Coutts established a fund for their relief. As the sufferers were experts in oriental needle-work, possessed of many secrets in construction and design that were a revelation to their patrons, they were encouraged in these industries. The various colors which they were accustomed to weave into their fabrics, and the simple designs with which they adorned them, were modified and elaborated by the methods of modern schools. Hence, while the exhibit known as that of the Turkish Compassion Fund contains many samples of embroideries, cushions, silks, and shawls, it has also specimens of elaborate ball-dresses, draperies, scarfs, and other articles of personal and domestic use and ornament. The proceeds from the sale of goods go toward the support of those employed, and for the care of the sick, supplying the needs of more than 2,000 Mohammedan women.

In the eastern portion of the north wing are the exhibits of the United States, or as announced over the entrance, an exposition of the applied arts of America. Here nearly every state in the republic displays its most artistic needle-work, its costumes, ceramic wares, mosaics, and other specimens of industry, largely contributed by societies of national repute. The associated artists of New York have a choice exhibit of embroideries and tapestries, and among the costumes shown in this section is the dress worn by the late Mrs Benjamin Harrison at the inauguration of her husband as president of the United States.

West of the court of honor, adjoining the vestibule, are the telephone office, information bureau, and the exhibits which illustrate the scientific education and attainments of women. Among them are many collections of minerals, fossils, and botanical specimens, gathered by women from all parts of the world. Woman's work in the surveyor-general's office finds expression in a series of maps and drawings, and Massachusetts, through the Prang Normal classes and various societies for the encouragement of home studies, illustrates certain phases in the scientific education of women. Here also is a case containing scientific works, including the *Notes on the Satellites of Saturn* by Maria Mitchell, late professor of astronomy at Vassar college.

WALES EXHIBIT

Opposite the Russian section is a reproduction in miniature of the Sioux City corn palace, which may also be seen in other forms elsewhere in the Exposition. The one in the Woman's building was designed by Mrs William I. Buchanan, wife of the chief of the Agricultural department, and the model is the handiwork of the ladies of Sioux City. The paintings of flowers and fruits which appear to decorate the interior are in reality composed of kernels of corn and seeds of different colors, and the frescoes of the ceiling, of pampas



MODEL OF CABMEN'S SHELTER, LONDON

WORK BY THE COUNTESS OF ABERDEEN

grass and millet seeds, while in the construction of the large picture known as The Water Carrier, the native grasses and grains are used.

In the main hall-way of the northern wing, opposite the exhibit of the Turkish Compassion Fund, is a case containing quaint, doll-like dummies attired in female costumes. This is a loan collection by New York women, the figures portraying women representative of American history, from the early Spanish to the present times. Among them is a St Augustine beauty in full skirt and lace mantilla; then a colonial maiden, a miss of New Amsterdam, a New England dame, a Puritan and a quakeress, a New York woman elegantly attired in silks and furs, a matron of revolutionary times, a balloon-like figure of the era of the civil war, and the fashionable dames and damsels of the present day.

CATHOLIC VESTMENTS

In the south wing, the Spanish pavilion occupies the post of honor, in the centre of other foreign exhibits, the collection illustrating many of the activities of women in the line of art industry, whether residents of Spain or Spanish-American countries. The display of woman's handicraft embraces specimens of needle-work, knitting, crochet-work, lace-making by hand and loom, plain and colored embroideries, tapestry, embossing, fine and coarse domestic cloths, and other textile fabrics peculiar to each section of the country, so arranged as to form a historic collection, this idea forming the motif of the design. The work of women is further illustrated by articles suggestive of their labors in the government tobacco factories, and in the culture of silk. Many of the choicest samples are from industrial institutions under government auspices, and from those established for the education of the deaf and dumb.

Separated from the Spanish section by the Japanese division is the pavilion of Italy, the royal laces of the house of Savoy, never before displayed in foreign lands, forming the nucleus of the exhibits. For their safe keeping and return a bond was required from the government of the United States, and then by their owner, Queen Marguerite, they were placed in charge of a detachment of royal marines, with the countess di Brazza specially instructed to see them safely housed within the pavilion; for these are heirlooms descended through many generations, some of them articles the secret of whose manufacture is known only to the royal household, and others samples of varieties which the queen is introducing among the women of Italy, reviving an industrial art that was well nigh lost. The pavilion is furnished in the style of the fifteenth century, the furniture and the iron gate at the entrance, of delicate lace-like workmanship, being made in Venice. Within the court is a lay figure,

AUSTRIA

engaged in making lace, with choice specimens of bridal veils, of Burano, Genoese point, and Sicilian and Venetian laces. Of all the queen's treasures there are none more highly prized than the bed-spread under which Victor Emanuel was born. Finally the collection serves as samples of the work which is now being done by the poorer classes of the kingdom, and many of the pieces on exhibition are from those who receive instruction at the schools of Burano, of which the queen is president. Much valuable information was collected by the Italian commission as to the ancient history of textile arts, and especially of lace-making, all of which is conveyed in the form of books and photographs.

Japan presents in her two chambers a dainty picture of the industrial and domestic occupations of her women, one representing the boudoir of a lady of high rank, and the other a library. In the former are all the articles of toilet used by the wives of the daimios, or feudal lords of olden times, specially prepared for the purpose. In the library is a collection of miscellaneous articles, including stringed instruments, mats, screens, banners, a case of books, a writing table, and other appropriate furnishings. There are also oil-paintings, pictures in relief, carvings in ivory, cocoons, raw silk, embroideries, crinkled textures and crapes, hand-woven tapestries, laces, cloissonne, enamel-work, china-ware, lacquer work and artificial flowers. The empress, the empress-dowager, and the princess Mori all took an active part in the organization of the Japanese exhibit. By the first were contributed choice specimens of raw silk; by the second, fabrics woven in her own palace, while the princess, as president of the Japanese commission, also gave her cordial support.

JAPAN

To the French section in all its completeness, Parisian milliners and glove makers contributed their daintiest conceptions. D'Alencon, Chantilly, and French point-laces fill several cases, and there are complete trousseaus for matrons, young girls, and infants, with handkerchiefs, fans, and parasols such as only the French can make. For the display of several elegant costumes by a Parisian house is provided a model drawing-room, in which a tea-party is in progress. The walls are covered with tapestry, and at the table of antique design presides the hostess, attired in a gown of brocaded satin trimmed with lace. The evolution of the art of dress is represented in a large glass case filled with dolls, or other miniature reproductions of famous women: St Clotilde, wife of Clovis; the royal dames of Francis I and Henry IV; the Medici, Marie Antoinette, and many other historic characters are here represented with singular fidelity, the details of dress being copied from portraits of the originals.

CEYLON PAVILION

NAVAJO INDIAN WORK

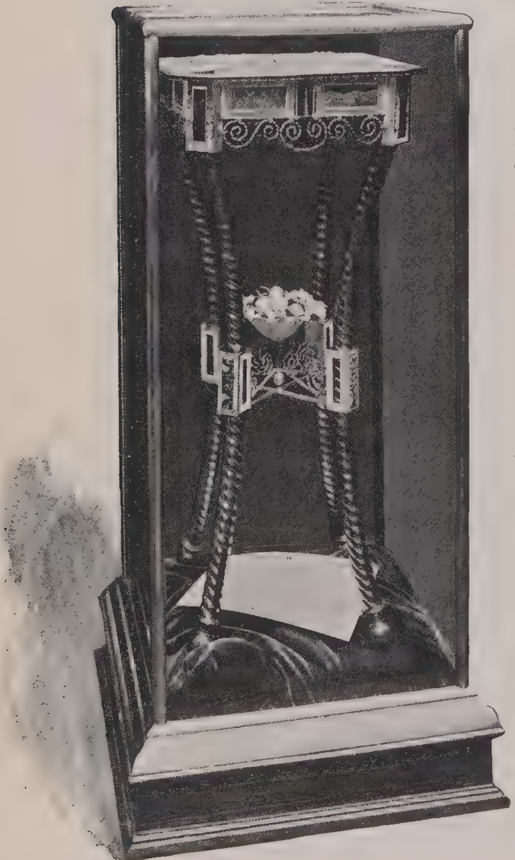
GERMANY

FROM FIBRE OF CENTURY PLANT, AZORES

Between the French and Spanish sections are those of Mexico, Norway, Sweden, Siam, and the cape of Good Hope. The rich specimens of needle-work, in gold and silver, from the women of Siam, with many other samples, appear almost side by side with the industrial products of the peasantry and societies of Sweden. In the shape of a church window is a beautiful specimen of stained glass, the Swedish saint, Bridget, forming the central figure, and in the hall of the rotunda is a historic collection of engraved medals and bronze reliefs, contributed by a lady of Stockholm. Norwegian women display articles of needle-work, wood-carvings, and feather mats, through an Illinois industrial society whose members are of this nationality. A native woman on snow-shoes, with a basket of shells on her arm, stands at the entrance to the booth, and in the model of a Norwegian cabin are grouped figures of peasant girls in holiday, bridal, and every-day attire, with city ladies in more elaborate costumes.

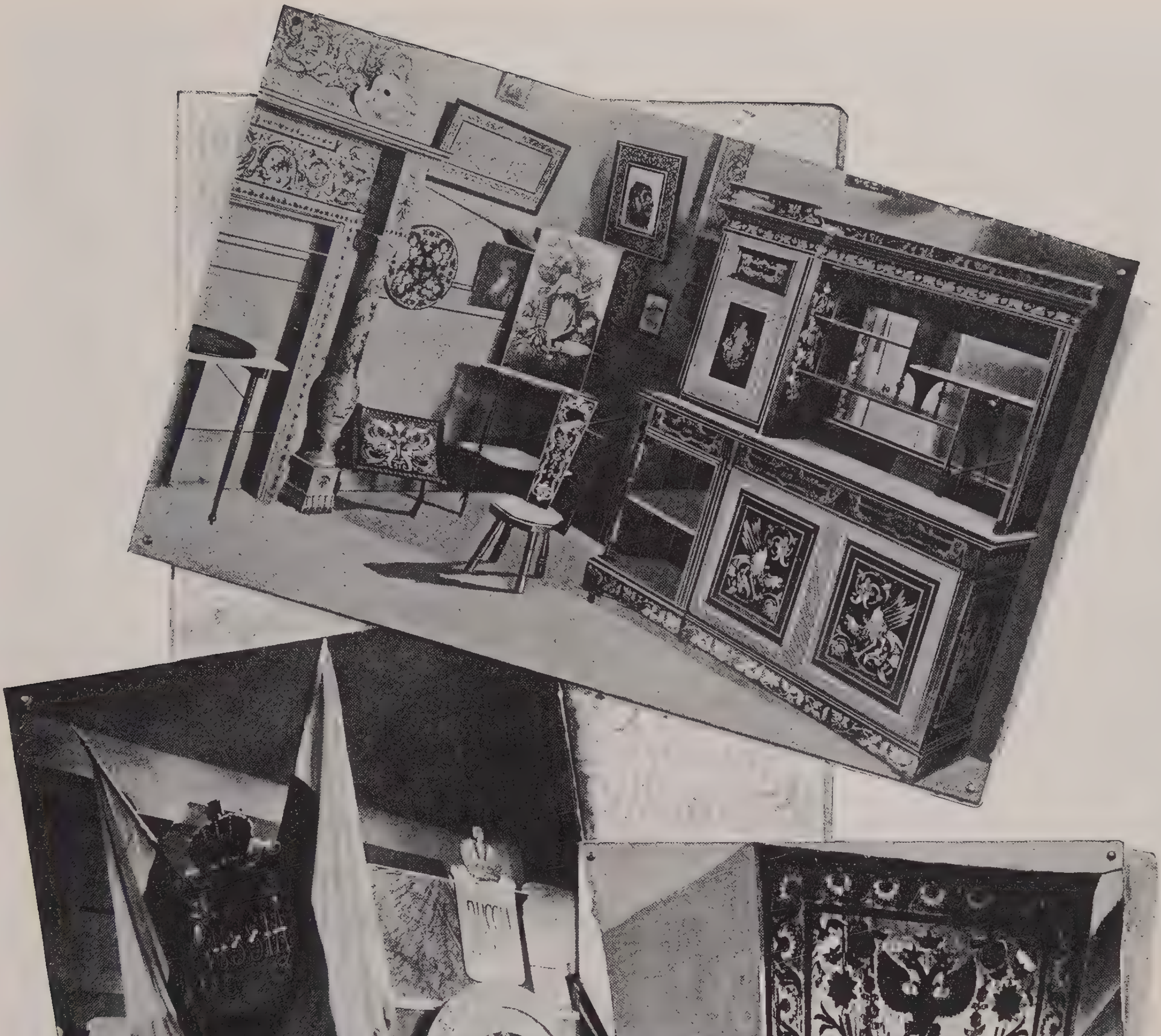
Soon after the Russo-Turkish war, Kate Marsden, an English woman and nurse of the Red Cross society, journeyed east to Siberia for the purpose of founding leper missions, and near the Swedish and Norwegian booths is a model of the village which she established in the province of Takutsk. It consists of two hospitals, a school, a church, houses for lepers, and their attendants, and workshops for those who retain the use of their limbs. Fronting the models, is a miniature of one of the miserable hovels in which she found a number of unfortunates lurking in their forest lair. In an adjoining booth the women of the cape of Good Hope display in neat designs their native grasses, shell and feather work, with musical instruments, brooms, pottery, and filigree work of Kaffir production, and figures of Bushmen in full dress.

Mexico has a large and tastefully arranged exhibit. In the centre of her section are several cases filled with fancy-work, including artificial fruits and flowers, and fashioned in blossoms and twigs



ONYX TABLE OF NEW MEXICO

BELGIAN FABRICS



RUSSIAN SECTION

RUSSIAN TAPESTRY

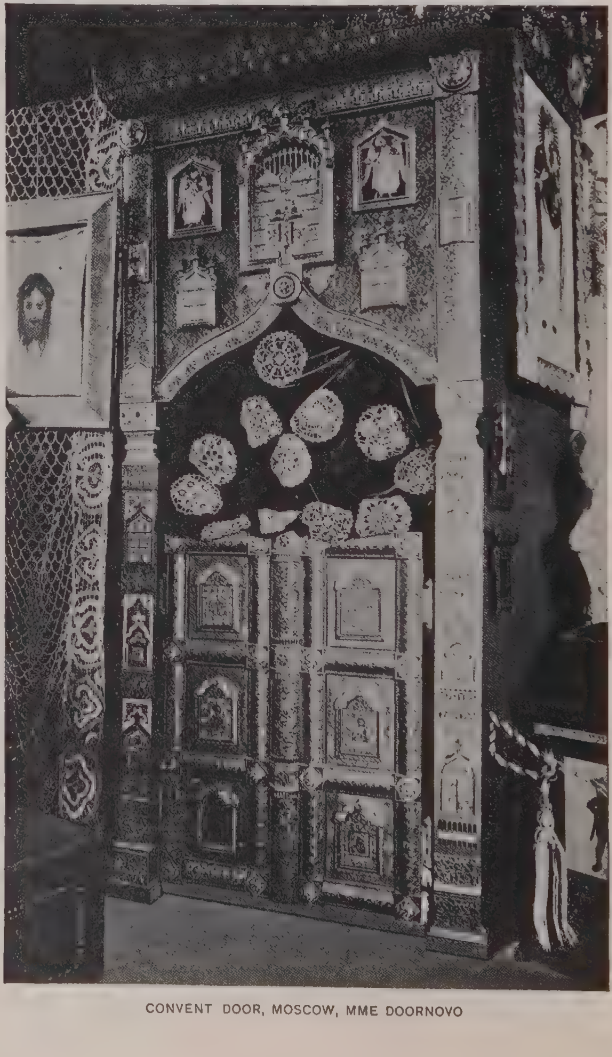
a ship under full sail, the latter made at a female school of art. The Ceylon tea-house is also an attractive spot, with its carved tables, its light draperies, its dainty cups of wood and china-ware, and its dark-eyed, native damsels. At one corner is a small case of dolls and fancy-work, contributed by the mission schools of the country, and across the passage-way, a more elaborate display of fine needle-work, from the school at Guntur, India, of which Lady Wenlock, wife of the governor of Madras, is patroness.

Beyond are the exhibits of Belgium, Austria, Brazil, and Germany. Especially attractive among the light specimens of fancy-work, contributed by the women of Brazil, are the designs in vari-colored feathers and fish-scales. By Belgium's queen and the ladies of her court was mainly gathered a small collection of embroideries, laces, and works of art, the queen sending two water-colors of her own execution. Austria's embroideries are the most noticeable features of her display. At the entrance to her pavilion is a screen painted by the archduchess Maria Theresa, and within are excellent imitations of ancient Polish carpets.

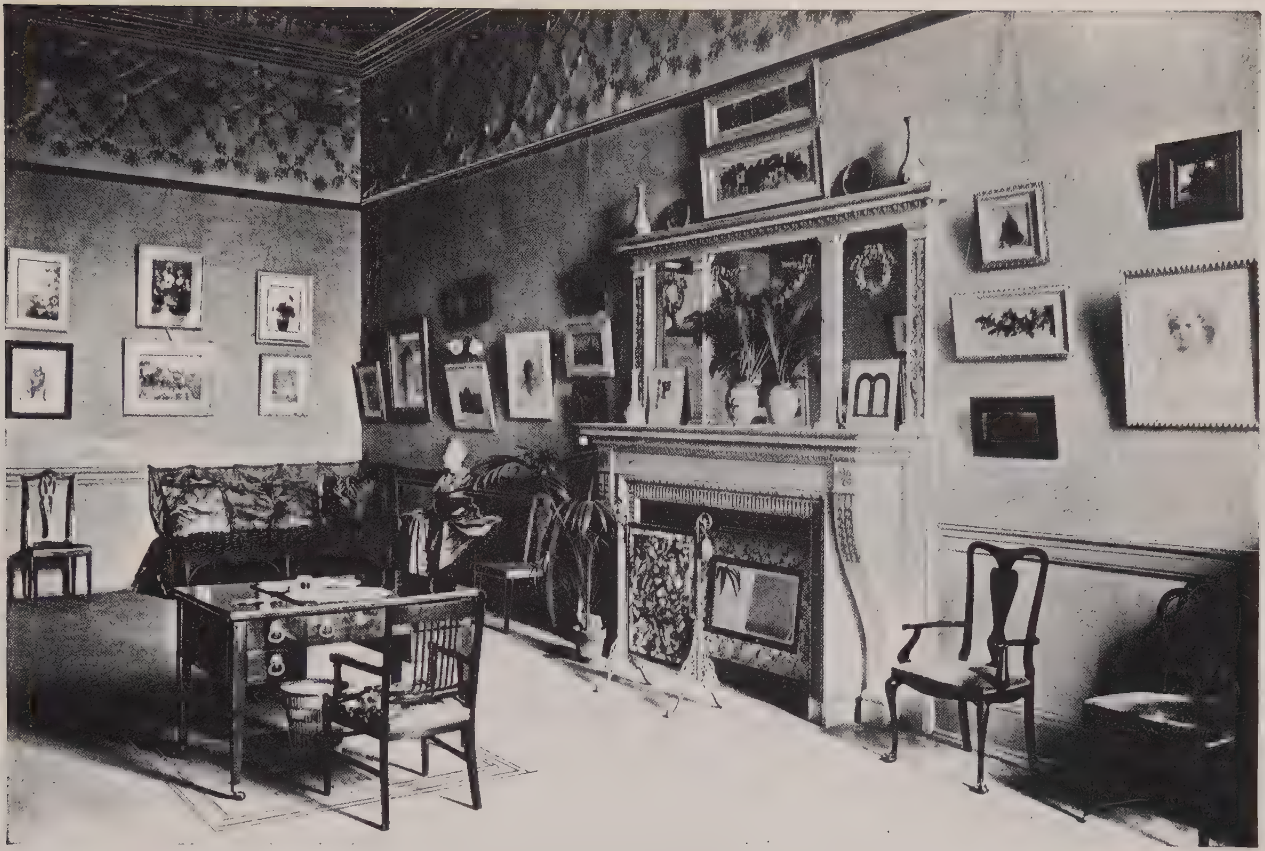
By Germany was organized one of the most skilfully grouped exhibits in the building, largely due to the efforts of the president of her committee, Anne Schepeler-Lette, of Berlin, who for years has been a prominent figure in promoting the industrial education of women. The decorated china and leather, the laces, embroideries, and other specimens of needle-work were, as a rule, contributed by those who have received instruction in the industrial schools and societies of the empire. There is also an educational department, including higher instruction, domestic economy, and the public care and training of children. The collections of the kindergartens, the children's hospitals, and the sewing and cooking schools comprise statistics, plans, photographs, models, and specimens of handiwork and utensils, with explanations by Fröbel, thus enabling one to study from its inception the system of industrial education.

In another class is represented the industrial training afforded in the public schools of Breslau and Munich, and in various schools and societies throughout the empire. By

OLD TIME COURT DRESS, RUSSIA



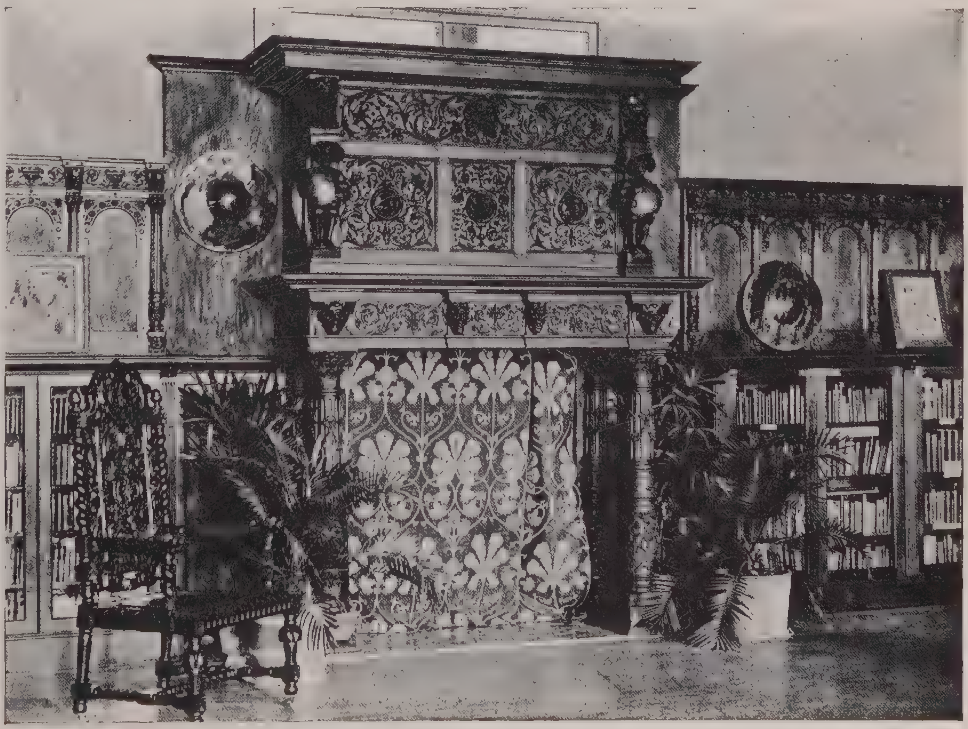
CONVENT DOOR, MOSCOW, MME DOORNOVO



NEW YORK ROOM, WOMAN'S BUILDING

the woman's society of Baden, with its numerous branches, is illustrated its methods of training young women and caring for dependent children. Photography, drawing, cooking, printing, laundry work, book-keeping and art industries, are taught in establishments connected with the Lette society, and embroideries, drawings, sewed garments, printed books, artificial flowers, photographs, and other articles are displayed as specimens of the pupils' work. Special courses in dress-making, as taught at various institutions, are illustrated by text books and paper models, while of domestic economy there are most interesting expositions. The committee which had the latter department in charge provided not only printed volumes bearing on the subject, but models of kitchens, cooking schools, and institutions for the education of servants and housekeepers. Samples of work produced by various charitable institutions, with a presentation of the professional labors of nurses, are also found in the German section, in the centre of which is the display of the Lette society, and above it a bronze bust of its founder.

Returning to the gallery floor, we find there, opening on the eastern and western corridors, the various committee, assembly, and reception chambers, whose decorative features have already been



WOMAN'S LIBRARY

described, together with the library and the exhibits of the British training schools. The northern section is occupied by the assembly room and the model kitchen, and on the south is the organization department, where are the headquarters of the industrial, educational, religious, and other associations of women. The space set apart for this purpose, including nearly 12,000 square feet, is divided into more than sixty compartments by rails and curtains of blue silk, corresponding in color with the tints of the frescoed walls, and forming the only lines of demarcation between the exhibits of the various societies, thus giving to the entire collection a social and cosmopolitan aspect.

The largest area is occupied by the Woman's Christian Temperance union, representing more than 200,000 active members. On their walls are the banners of many local organizations, with portraits of such leaders in the cause as Frances Willard and Mary Clement Leavitt, the latter the first missionary to travel around the world for the purpose of organizing societies in the interests of temperance and social purity. Here is a monster petition to which are still being added the signatures of men and women in every portion of the earth; also a huge globe covered with the cards of four million children living in forty-four countries who have taken the pledge of total abstinence. A corner of this section, decorated with Japanese designs, and containing a large pendent bell composed of discarded opium pipes, calls attention to this branch of the reform, earnestly prosecuted by the union in Eastern countries. The booth is handsomely equipped, and in its exhibits is sufficient evidence of the world-wide progress of the cause.

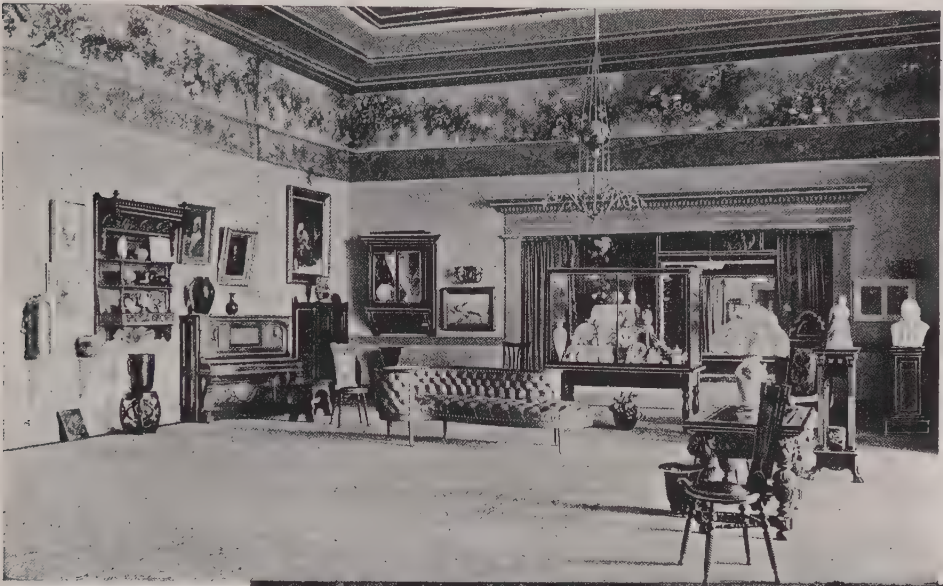
WOMAN'S LIBRARY

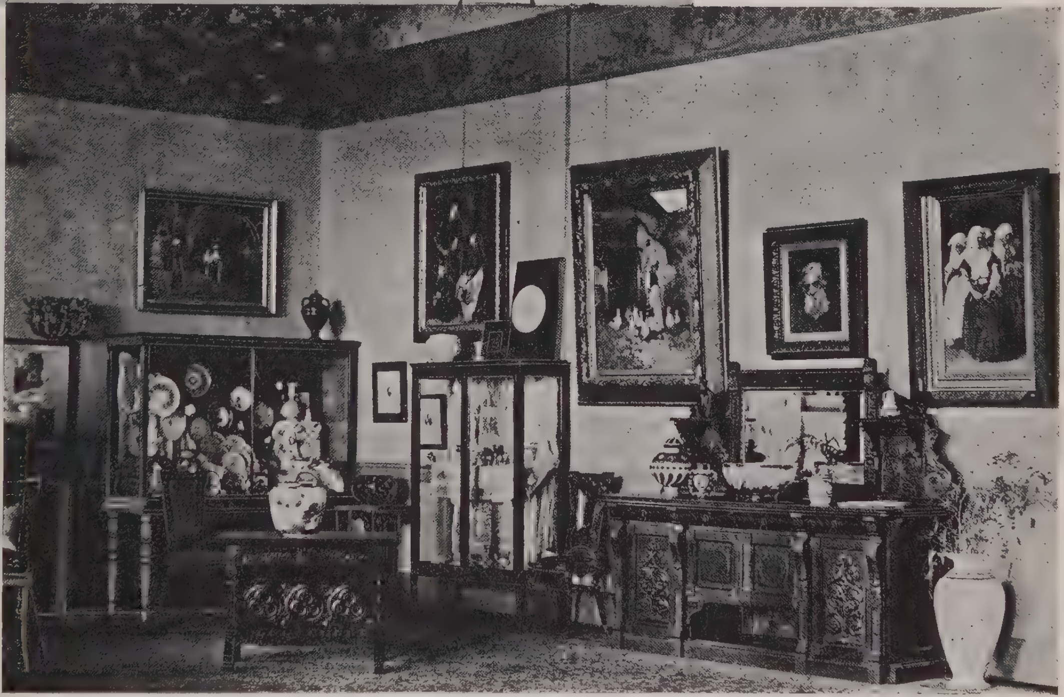
Adjoining this section is the booth of the Chicago Woman's club, whose membership includes many earnest workers in charitable, intellectual, and reformatory movements. Near by are the headquarters of the International board of the Young Woman's Christian association, whose central offices are in St Louis, and whose special object is to watch over the interests of young work-women. Among the homes erected for such persons, as shown by illustrations, the one in New York city is on the largest scale. From the forty branches of this association come exhibits of class work, and over each is the sign of the order, in the form of an ivory-tinted shield, finished in threads of blue and gold.

The booth of the order known as the King's daughters, whose silver cross has been carried into many far corners of the earth, is tastefully decorated with festoons and banners of purple, silver, and white. The order of the Eastern Star, an auxiliary to that of Freemasonry, unfurls a banner of black satin lettered in gold, and a symbolic sheaf of wheat. Its quarters are luxuriously furnished, with carpet of moquette, couches, and easy chairs.

Without attempting to follow any special order of procedure, attention may be called to the work of several associations, as illustrated in this department. Home and foreign missionary societies occupy a considerable space, the latter displaying many curios gathered in connection with their work. Chinese women exhibit a banner of blue, gray, and gold, in honor of their American friends. A Japanese woman sends a robe, later to serve as her burial shroud, and over which are scrawled the blessings and consecrations of native priests. Converted heathendom has also contributed to the collection a Turkish prayer roll, and a Buddhist rosary.

There are here represented associations for the rescue of fallen women; and by one known as the Girls' Friendly society, under the auspices of the episcopal church, is illustrated the work that it is doing, with a view to the protection of girls whose calling exposes them to temptation. In the booth of a Philadelphia society, whose members, excluded by sickness from contact with the world, console each other by messages sent through an official organ; in that of a Philadelphia home, whose purposes are revealed in its pictures and stories of crippled children, and in the quarters of the Woman's relief corps of Kansas, is shown what is being accomplished for the aid of those suffering from physical ailments.



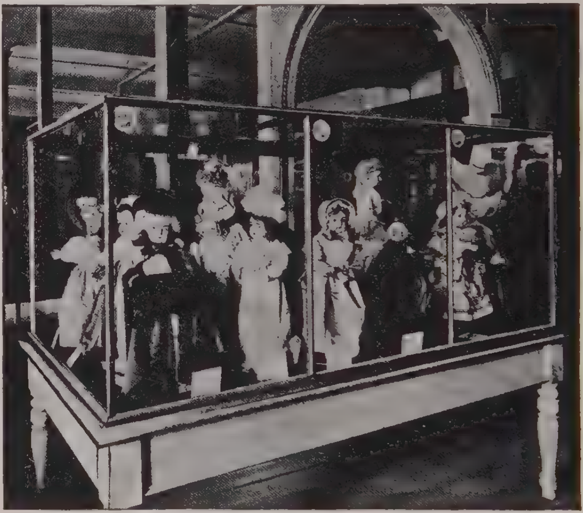


CORNERS IN CINCINNATI ROOM

Seventeen unions and a very large membership are represented in the exhibits of the Woman's Educational and Industrial association. Female suffrage is symbolized in various devices, as on the azure ground of the American flag, with the great star of Wyoming, and the smaller symbols of Kansas and Michigan. There is also the irrepressible figure of Susan B. Anthony, in bust and portrait form, and in the shape of souvenirs. In conclusion much may be learned in this department as to federations and councils of women, industrial institutes, schools for needle-work, flower missions, ceramic clubs, and literary, scientific, and philanthropic organizations, all of which find expression among these collections. Results are further illustrated in a book of statistics, compiled under the direction of the Board of Lady Managers, giving the names and membership of the different bodies, with the number of women employed in every branch of work, thus enabling the visitor more fully to appreciate the significance of the display.

CEILING, WOMAN'S LIBRARY

The walls of the staircases and vestibules are adorned with tapestries, not a few of them of oriental design, and of the galleries themselves many portions are tastefully embellished. A work which attracts general attention, but one less noted for its beauty than for its historic associations, is a reproduction of the famous Norman tapestry contained in the town-hall of Bayeux. The original is formed of a strip of linen, 200 feet long by less than two in width, with figures, worked in colored worsted, depicting various episodes in the career of William the Conqueror, including his departure from Normandy, and his invasion of England. As tradition relates, it was fashioned by his wife, Matilda; but be this as it may, there is little doubt that the tapestry was made during the years whose events it depicts. The copy forms a border for the eastern corridor, where also are the national costumes of Spanish women, belonging to various provinces, with the dress of a mountaineer, made of long grasses and wisps of hay, and yet said to be water-proof. In the north-eastern section of the gallery are the pictures contributed by Queen Victoria, and the princesses Christian, Louise, and Beatrice. In the northern corridor, from which open the large assembly room and model kitchen, is a chair of state from the Mexican government, and some rich tapestry work from London, and on the opposite side is a choice collection of French artistic embroidery.



HISTORICAL COSTUMES, NEW YORK EXHIBIT

A favorite resort in the Woman's building is the model kitchen, with floor of tiling, its gas cooking-range and modern utensils, all scrupulously clean, and in the neatest order. During the sessions of the classes in cookery are submitted for the approval of visitors specimens of their culinary skill, among them the lightest of muffins, corn-starch, and so-called Indian puddings. The kitchen is under the direction of Mrs S. T. Rohrer, of Philadelphia, by whom were recently introduced in European countries, in conjunction with a government agent, all the various products of maize; and to illustrate the many uses to which those products may be applied is one of the purposes of the exhibit. Some of the recipes were furnished by an agent of the Smithsonian institution, who procured them while living among the Zuñis.

DECORATIVE WORK, MARYLAND

ART FANCY WORK, BUFFALO

The Woman's library, furnished by the

CHICAGO ART WORK

women of New York, the ceiling decorated by Dora Wheeler Keith, contains some 7,000 volumes, written by women of every nation, and collected by committees in many states and countries. More than twenty-five nationalities are here represented in more than twenty languages, their dates of publication varying from 1587 to 1893. New York sends the largest collection of any of the states, France of the foreign countries, Great Britain and Spain the greatest number of rare books and manuscripts, the last a loan from the Biblioteca Nacional in Madrid. Some nations and states have sent also photographs and biographical sketches of their authors; others, as Sweden, bibliographies of the women of their country, and still others, as Connecticut and New Jersey, have printed handsome volumes containing representative articles from periodical writers, all prepared expressly for the occasion. New York's collection of club papers and periodical articles is type-written, and a marvel of completeness and mechanical execution. Nearly all these works are intended to form the nucleus of an international woman's library, to which additions will be constantly received. In the form of a card catalogue statistics have been prepared as to the career, education, and public work of each author, and when printed, will form a valuable biography of women.

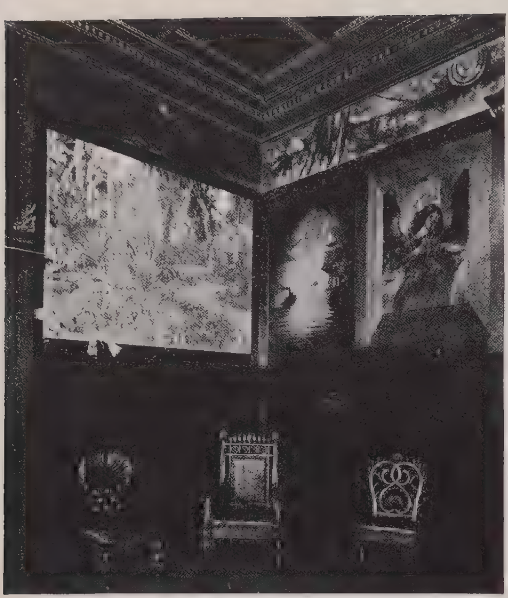
A collection of autographs and portraits of women of France, Great Britain, and America, the property of Mrs John Boyd Thacher, forms one of the attractions of the library. Another is a cabinet containing forty-seven different translations and editions of *Uncle Tom's Cabin*, in front of which stands a bust of Harriet Beecher Stowe. An oil portrait of Mrs Sigourney and two leaves from her diary accompany the Connecticut books. Other American authors are also represented.

HOSPITAL AND PHARMACY

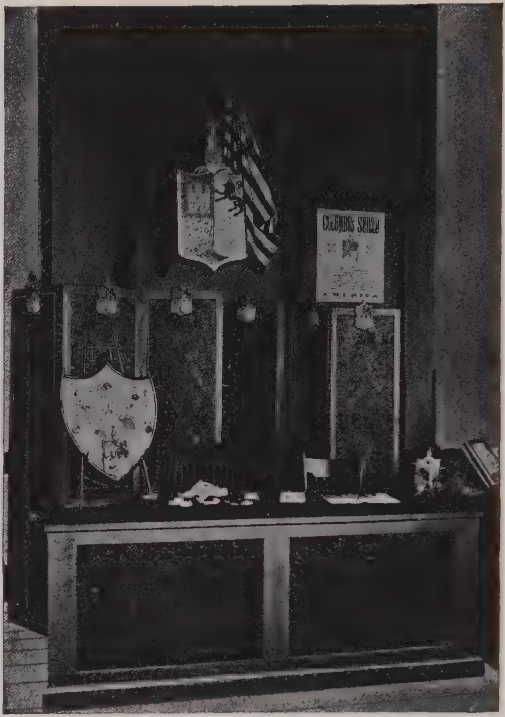
MRS McKEE'S INAUGURAL BALL DRESS, INDIANA

At either side of the library proper are the halls of Record, their walls covered with diagrams, charts, and tables containing much information as to the number of women engaged in the professions, their ratio of savings, mortality, and emigration, with other phases of their condition and career. In the corridors adjacent is an exhibit organized by prominent New York families, consisting largely of historic embroideries, miniatures, watches, snuff-boxes, fans, and laces.

But in the corridors the main attraction is the Keppel historic collection of engravings and etchings by women who have won repute in those branches of art. Among the first in chronological order are the plates engraved by Diana Ghisi of Mantua, between 1581 and 1588, most of them copies from Raphael, Tuccari, and Giulio Romano. France, Italy, Germany, and



CALIFORNIA ROOM



SHIELD OF COLUMBUS

England all furnished skilled female engravers and etchers to the world of art, from 1535 to 1835, and specimens of their work are here on exposition. Many of them were the pupils of male relatives who had previously made their mark, and among them were Angelica Kauffman and Caroline Watson, the former a Swiss whose works were chiefly produced in England, and the latter engraver royal to Queen Caroline. Finally in the form of a bust is a wood-cut by Marie de Medicis, bearing the date of 1573.

South of the library is the exhibit of the British training schools for nurses, the walls hung with portraits of women who have been leaders in the work, and with busts and statues of others scattered throughout the apartment. Under a portrait of Queen Victoria is a statue of Florence Nightingale, and near it a bust of Princess Christian, president of the Royal British Nurses' association, with a statue of Sister Dora, and a bookcase containing her keys, scissors, chains, and other personal effects, such as remind us of her devotion and self-sacrifice. In a word, there is an entire gallery of celebrities, not least among which is the figure or bust of Rohere, the founder of saint Bartholomew's hospital in 1122.

In large glass cases are the exhibits illustrative of methods and appliances, among which are ligatures and bandages, thermometers for marking the temperature of fever patients, surgical dressings, ventilated corsets, hygienic shoes, and other articles of wear for the sick. District nurses and private nurses have their separate outfits, as here illustrated, and in the ward baskets are most ingenious contrivances for packing articles into the smallest space. In the oil-silk bags of Queen Victoria's jubilee nurses are stowed the cordials and medicines with which they relieve the poor. Models of apparatus used in medical and surgical treatment, designed by an employé of a homœopathic hospital, form an interesting though painful study. The dainty lace caps worn by English nurses, the medals, badges, and decorations awarded for distinguished service in war and pestilence, and the models which represent the costumes worn in various hospitals, are also among the collection.

CALIFORNIA ROOM

PELICAN CAPE, NEW ORLEANS

Adjoining the exhibit of nurses' schools is a room which contains the overflow from the New York collections. It consists of articles donated by colored women of that state, and was organized by a colored female commissioner who well represents the capabilities of her race. In one corner is jewelry made by the natives of

FANCY WORK AND DECORATIONS

PAINTED CHINA

West Africa, and elsewhere, specimens of cabinet work decorated in designs burned into the wood, with artistic embroideries, fans, and laces, and pictures in oil, water colors, and crayons. In the covers of a plush album is shown a sample of the first book-binding done by colored women.

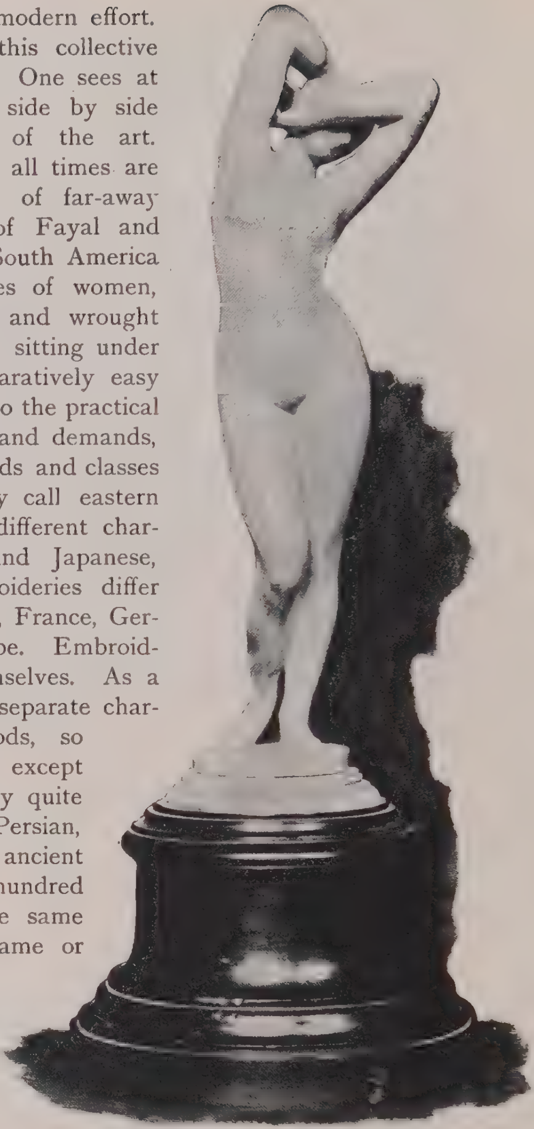
Scattered throughout the Woman's building are striking illustrations of the revival of art needle-work, which in the middle ages was almost the only industry that occupied the minds and hands of women. In this modern revival, which is of comparatively recent date, England and the United States have taken the lead, and in this connection may be quoted a few extracts from an article contributed to the *Art Amateur* by Mrs Candace Wheeler, director of the department:

"The old and familiar art of needle-work, the art which began when Eve sewed fig-leaves in the Garden of Eden, the art which has been the heritage of Eve's daughters in all ages of the world, has never in history made so great a showing or illustrated so conclusively its claim to rank as one of the great arts of the world. The needle-work of all the ages is here—stitchery which goes back to the time of the Beauvais tapestry, that historical treasure whose archaic story-telling renders it too precious for presence even in the wonder-time of the Columbian Exposition, and makes a reproduction of it a thing of national value. There are embroideries which are precious from every point of view—from their antiquity, and the human interest which therefore attaches to them; from their methods, which have long been lost to the art; from the use of materials of a purity and preciousness almost unknown to modern manufacture, and from a color the subtlety of which only the painting of time can give, and which no dyes can rival. These qualities give a many-sided value, which dwarfs

FANCY WORK

EMBROIDERY, CHICAGO

OLD SPANISH CHAIR

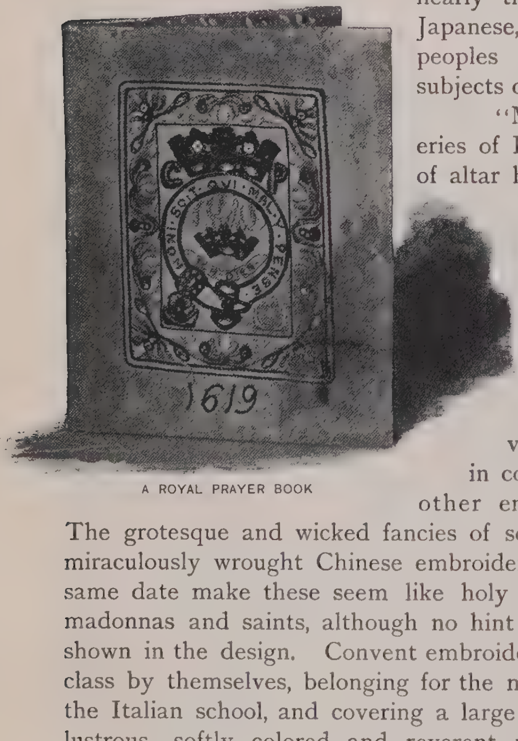


PHRYNE, IN SIXTEENTH CENTURY IVORY

even the best and most earnest of modern effort.

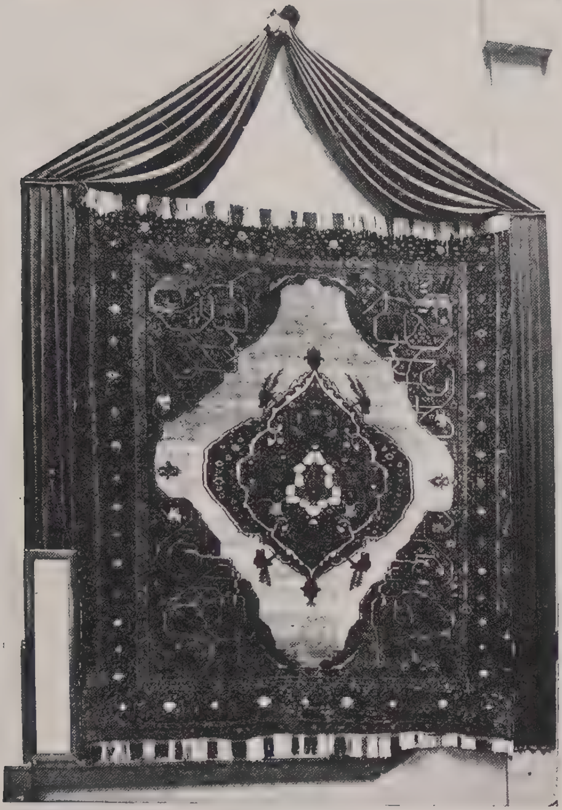
"The first impression of all this collective wealth of embroidery is bewildering. One sees at a glance, almost, the first attempt side by side with the very latest development of the art. Examples of all countries as well as all times are here—of India, China, and Japan; of far-away Persia; of Russia and Roumania; of Fayal and Ceylon; of Greece and Arabia; of South America and Mexico—the work of all races of women, wherever they exist or have existed, and wrought out their quiet days with the needle, sitting under palm and pomegranate. It is comparatively easy to mark the great divisions; but even to the practical observer schools and countries, uses and demands, have widely differentiated the methods and classes of these divisions. What we broadly call eastern work will be found to have very different characteristics and features. Chinese and Japanese, Persian, Indian, and Turkish embroideries differ from each other as do those of Italy, France, Germany, England, and Northern Europe. Embroideries of all periods characterize themselves. As a rule, eastern productions keep their separate characteristics through succeeding periods, so that it is difficult to fix their dates except approximately, and by condition or by quite obvious effects of time. Ancient Persian, and comparatively modern Persian, ancient Indian, and Indian embroideries of a hundred or even of fifty years ago, have the same style and methods, and use the same or nearly the same materials. Chinese, Japanese, Egyptian, and other Eastern peoples have scarcely changed their subjects or methods in a thousand years.

"Most of the antique embroideries of Europe are found in the shape of altar hangings and vestments, for in the embroideries, as in the pictorial art of the early centuries, the Church was the great patron. Many of them were wrought in nunneries, and, in fact, could not be produced except in the quiet and uneventful life of the cloister, where color and stitchery made the one interest and contrast of colorless lives, and could therefore almost monopolize the thought of the inmate who produced them. There is certainly a peacefulness and repose of subject and treatment in these convent-wrought hangings very greatly in contrast with other embroideries. The grotesque and wicked fancies of some of the miraculously wrought Chinese embroideries of the same date make these seem like holy pictures of madonnas and saints, although no hint of figure is shown in the design. Convent embroideries form a class by themselves, belonging for the most part to the Italian school, and covering a large part of the lustrous, softly colored, and reverent needle-work of the fifteenth and sixteenth centuries in Italy. They are among the most attractive of all the antique pieces shown in the Columbian Exposition, and deserve almost individual notice and description."



A ROYAL PRAYER BOOK

FRENCH ART



TAPESTRY

FRENCH COAT OF ARMS, GOLD AND VELVET

Through the efforts of the Board of Lady Managers was built and furnished the Children's home, on ground adjoining the Woman's building, and forming of itself one of the educational features of the Fair. While intended mainly for the care of children too young to wander through grounds and buildings in company with parent or guardian, it is also in the nature of an exhibit, or rather of a series of exhibits, displaying the best of our nineteenth century methods of rearing and training children. First, may be mentioned the model crèche, whose quarters are in a spacious, airy, and well lighted chamber, and where are shown from the earliest stages of infancy, the cradles and children's clothing of every age and nation, with the garments best suited in pattern, and material to the health and comfort of the child, and with brief lectures on these and kindred topics. Here, at a nominal charge, children are fed, amused, and cared for, the babies in an adjoining nursery, and older children according to age and conditions. In another apartment is a play-room suitably equipped, and there is a dining-room, kitchen, laundry, and drying room, all conveniently arranged.

Then comes the kindergarten, furnished and managed by the International Kindergarten association, with modern apparatus, and with object lessons of value not only to children but to those intrusted with their care, whether as mothers or teachers. In connection with the kindergarten is the kitchen garden, where, by the founder of this system, pupils are instructed in cooking, and other household work, but in such interesting method that their labor is one of pleasure. There are also classes in physical culture, a gymnasium, an assembly hall, a children's library, and a special department, equipped by the women of Pennsylvania, where may be observed the process of imparting to deaf mutes the faculty of speech.

The gymnasium in the centre of the interior court is furnished with dumb-bells, bars, swings, vaulting horses, and other appliances for the physical education of children. In cases and on stands around the gymnasium is a large collection of toys of many varieties, from those

QUEEN AND PRINCESS OF DENMARK EXHIBIT

FRENCH RECORD ROOM

FRENCH SALON

SÈVRES WARE

FRENCH RED CROSS EXHIBIT

SWEDEN'S EXHIBIT

FRENCH LACES

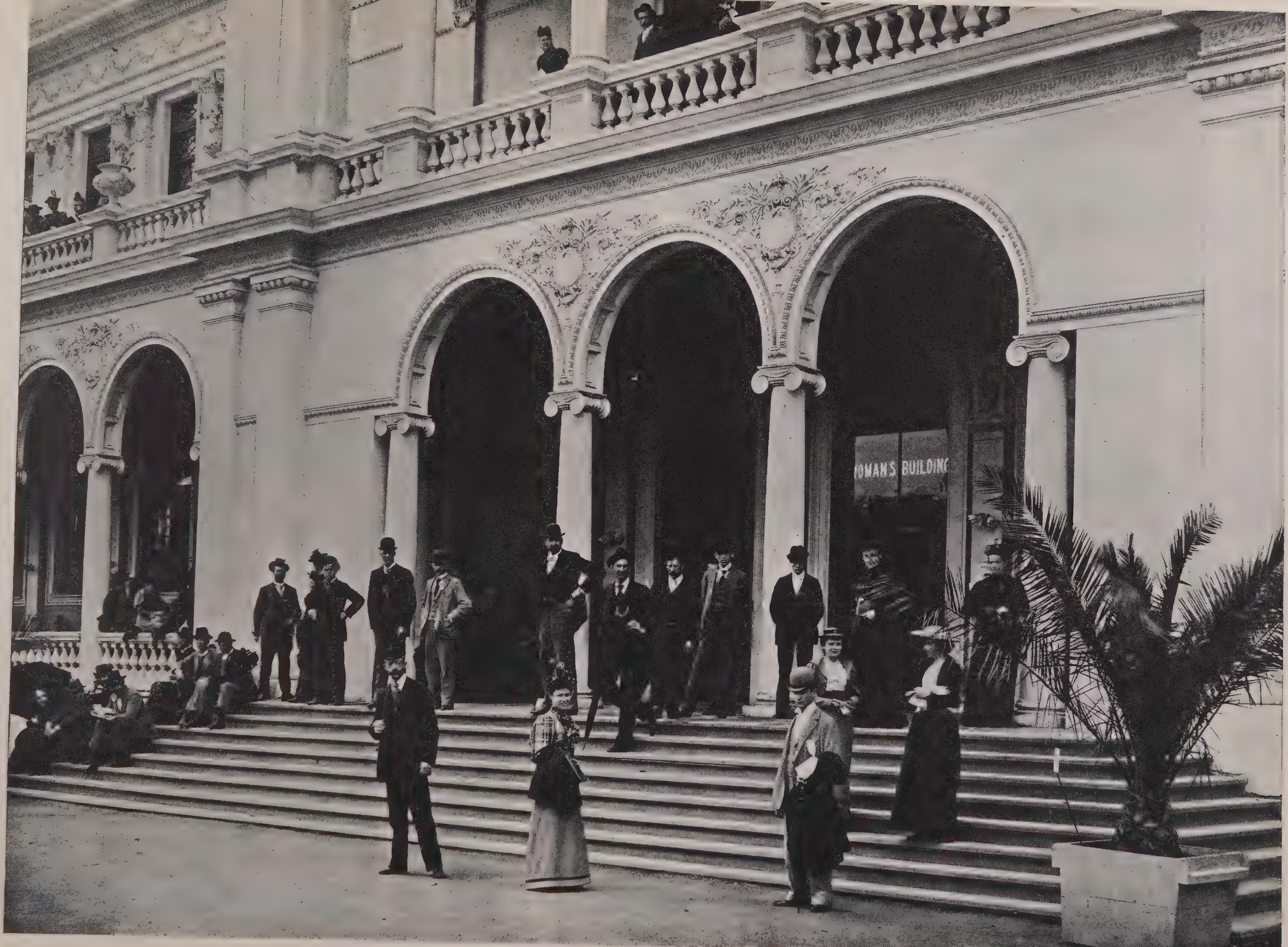
of ancient and savage nations to the most recent devices fashioned for the amusement and instruction of childhood. There are the Punch and Judy and Mother Goose of England, shaggy-haired dogs from Russia, dolls and furniture from France, kite lanterns from China, and on the second floor, Japanese models of acrobats, and domestic gods, with samples of articles used in various national games. An elaborate display represents a child's Christmas in Spain, with models of lordly castles and humble cottages, tiny figures of children engaged in the festivities of their country, and a wide expanse of miniature landscape. At one of the entrances is an Indian wigwam filled with native toys, and at another kindergarten literature, and a book composed of autographic inscriptions dedicated to children, among them contributions from Oliver Wendell Holmes, Canon Farrar, the Shah of Persia, George W. Cable, and Rudyard Kipling.

For older children more solid entertainment is provided in the assembly hall, where are lectures or talks on various topics, and especially on foreign lands, as represented at the Fair, many of them illustrated by the stereopticon. Then, under proper care, they are permitted to view the collections of which the lecture treats, and thus to compare what they have heard with the exhibits of the country described. The outer walls of the library are covered with the sketches and manuscripts of authors who have made juvenile literature a specialty. To these and to the collection of books, selected and arranged with reference to age and capability, some of the publishing houses contributed. Of magazines and periodicals, principally American, English, French, and German, there is also a large assortment.

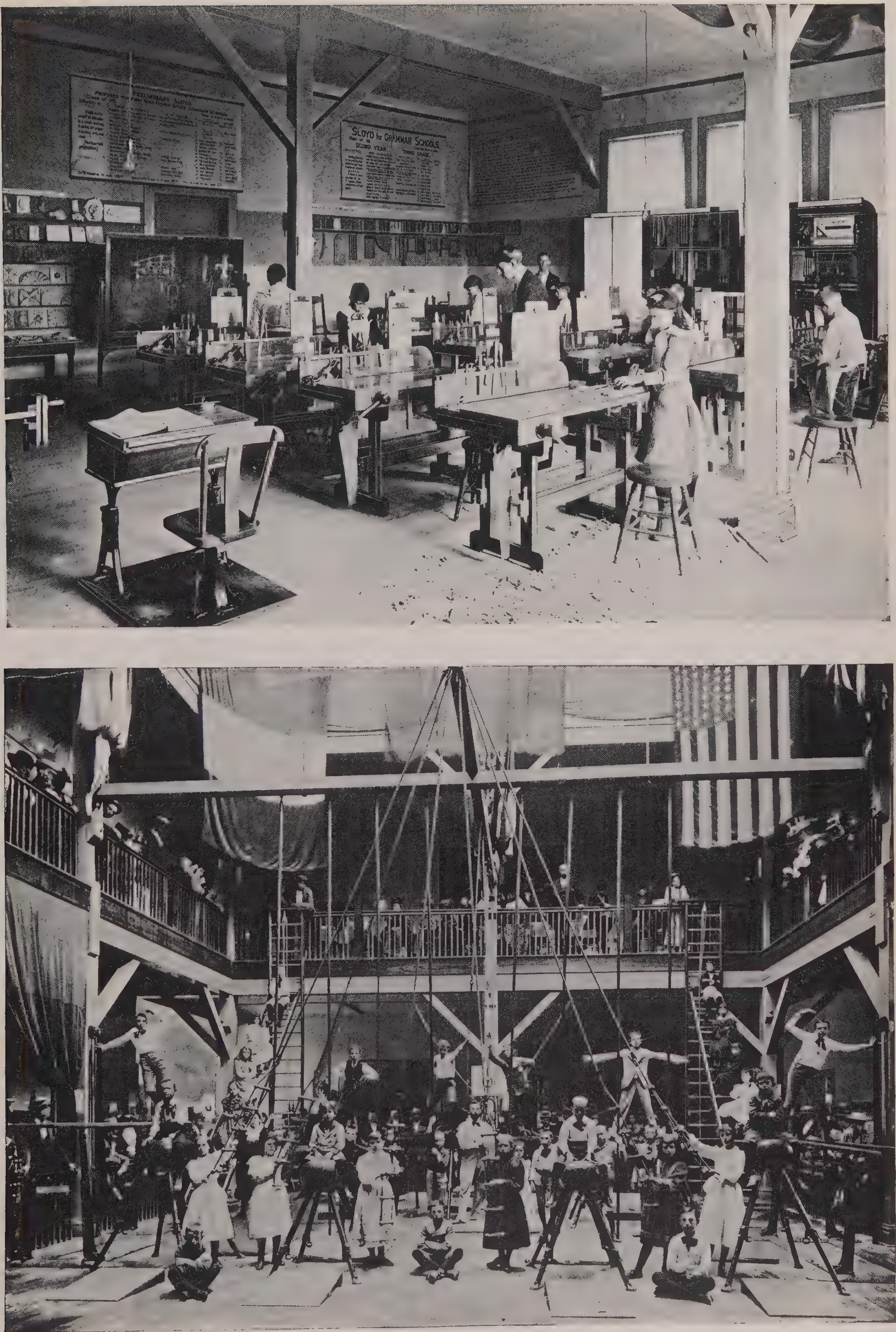
In one of the apartments instruction is given in the arts of wood-carving and clay-modelling, and in another is illustrated the process of teaching the deaf and dumb. In the latter children four or five years of age are taught to observe the movements of throat and lips, and the expressions of the face, in the articulation of words; for it is the theory of their instructors that, if taken in time, no case is hopeless, unless there exists some physical deformity of the mouth. There is also a room where the Ramona Indian school, of Santa Fé, New Mexico, displays its methods of teaching native children, a class of girls furnishing the living material for the illustration. The school was named after the novel written by Helen Hunt Jackson, and was partially

WELSH SPINNING

BABY RUTH'S PRESENT FROM SWEDEN



WEST ENTRANCE TO WOMAN'S BUILDING



INTERIOR CHILDREN'S BUILDING

GALLERY PAINTINGS

SIAMESE PAVILION

modelled in accordance with the theories therein advanced. On the gallery floor Charity is represented in this sphere of her mission by a group in marble from the atelier of Lorado Taft, a woman on bended knee parting in tears from her child, which nestles in the arms of the central figure, as with words of cheer and comfort she bids adieu to the sorrow-stricken mother.

SCREEN, SIAM

As with the entire display of Woman's industry and art, so with its Children's home, we have here a feature of the Exposition, of general, as well as of special interest. Just as the manufacturer, the machinist, or the electrician may study in their several departments the highest achievements of the inventor or the mechanic, so may all classes of visitors observe in the Children's building the most improved and enlightened methods for the rearing and education of children. In its crèche, its kindergarten, its kitchen-garden, its playground, gymnasium, library, assembly-room, workshop, furniture, and even in its toys, are illustrated the best and most recent appliances and methods which our nineteenth century civilization has evolved for the training of those who are soon to take our places in the arena of life, now demanding, as never before, that he who enters the lists should be fully equipped for the struggle.

Beginning with the crèche, where, in an airy and cheerful apartment, are shown the most rational modes of dressing and caring for young children, there is placed before us all that conduces to physical, intellectual, and moral development, all that expands child-nature and gives to child-life a healthful and vigorous growth. In the kindergarten and kitchen-garden are object lessons of practical value to mothers and teachers; the former a play-school where instruction is conveyed in entertaining form,

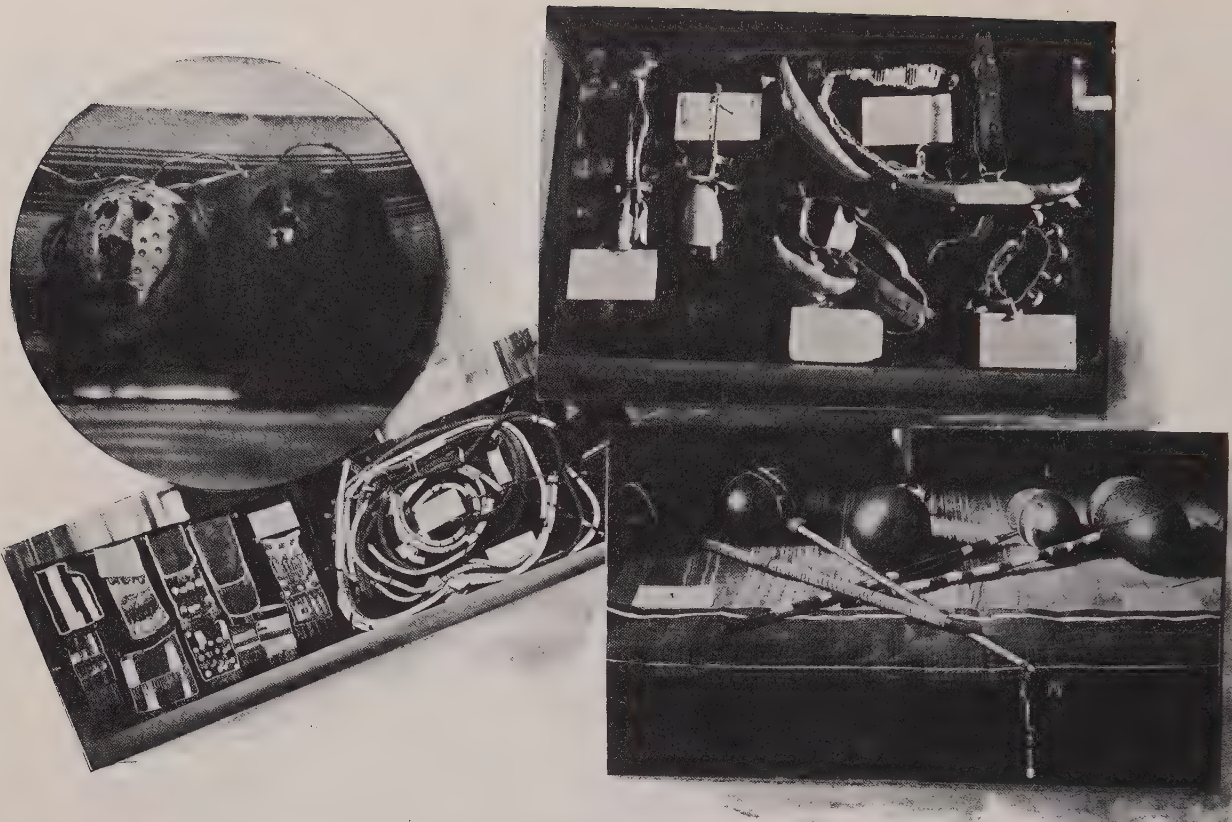
POTTERY EXHIBITS

FANCY WORK

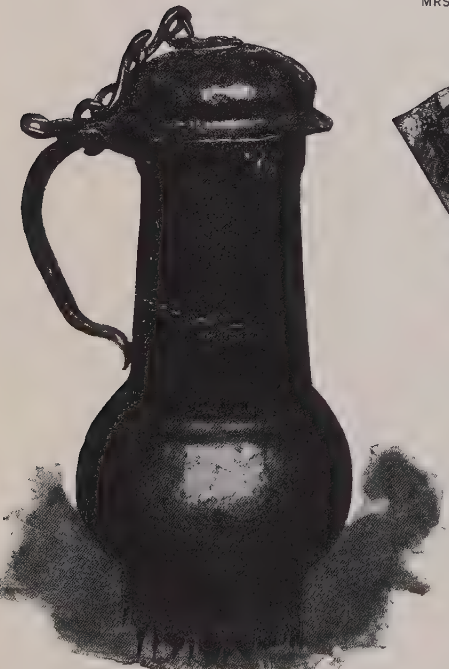
and the latter also a place of recreation where young girls take a pride and pleasure in learning the art of housekeeping. So with the school for sloyd, with its exhibit of wood-carving, and the classes for physical culture, in connection with the American Turner-Bund. The library is also a most attractive feature, with its tasteful and comfortably furnished room, its books and periodicals from many lands, and in many languages. To gather this collection was of itself a task of no slight difficulty, for publishers refused, as a rule, to contribute, overburdened as they were, with solicitations from other quarters. But the managers were equal to the occasion, and addressing letters to American and European writers in the line of juvenile literature, thus secured, as a nucleus, a large number of authors' copies and autographs. To these, many others were added, including illustrated works, magazines, and newspapers, manuscripts, sketches, photographs, prints, and portraits. All these were selected, as far as possible, from the standpoint of the child, and not of the adult, such works being placed on the shelves and tables as children loved to read, and not as their elders might wish them to have.

Such is one of the many good works that the Board of Lady Managers has accomplished, and this it has done through its own unaided efforts, formulating its plans, erecting and furnishing its building, and raising the funds entirely through its own exertions, for by the Exposition management not a single dollar was appropriated for the purpose, this not from indifference but because not a dollar could be spared from its treasury. To get together this Children's home that nestles almost under the eaves of the Woman's edifice, was in truth an undertaking that taxed to the utmost their already overstrained resources; but it was to them a labor of love, and in the gratitude of thousands of children, of thousands of mothers, in the unspoken but none the less heartfelt sympathy of millions of visitors from every quarter of the world, they have found a just reward. Says one of the contributors to a recent work on the Woman's department, written by members of the board or by those who have their cause at heart: "It has been at a great outlay of time and strength that the money for the Children's building has been raised and judiciously expended; but no one of the many workers who have contributed these building materials, time, and strength, have grudged the costly sacrifice they have made. We believe not only that the children who enjoy our building's hospitality will be benefited by our work, but that the children in every state of this republic, in every country of the world will directly or indirectly profit by it, and in this

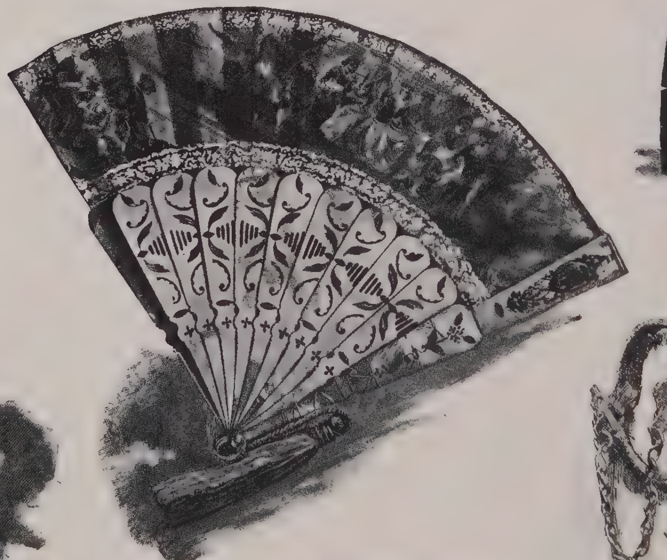
SCHOOL CLASSES, CHILDREN'S BUILDING



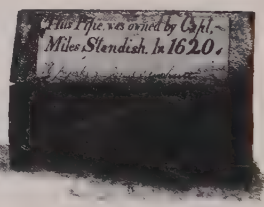
MRS FRENCH-SHELDON'S AFRICAN EXHIBIT, WOMAN'S BUILDING



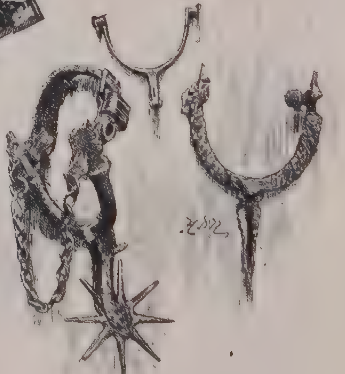
FRANCISCAN COPPER CENSER



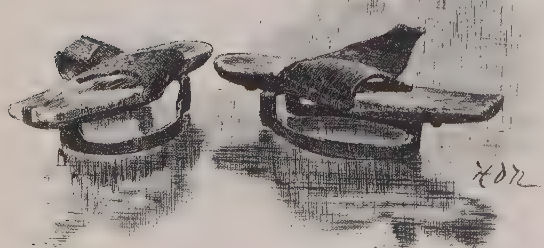
COLONIAL FAN



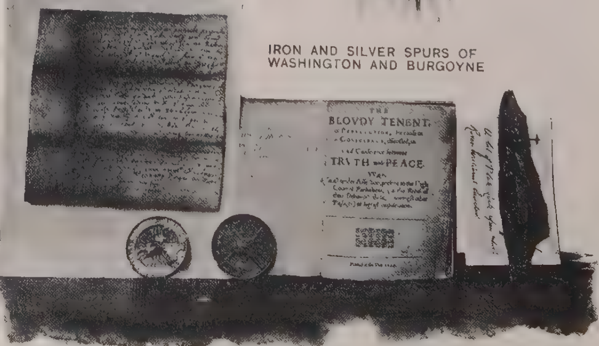
MILES STANDISH RELIC



IRON AND SILVER SPURS OF WASHINGTON AND BURGOYNE



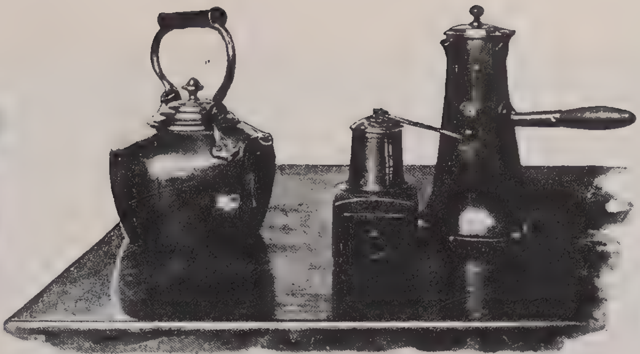
PATTENS, 200 YEARS OLD



RELICS ROGER WILLIAMS

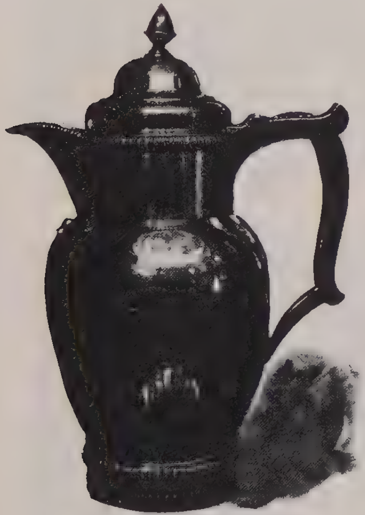
LADY MANAGERS' COLONIAL EXHIBIT, GOVERNMENT BUILDING

PROVINCIAL SEAL OF NORTH CAROLINA

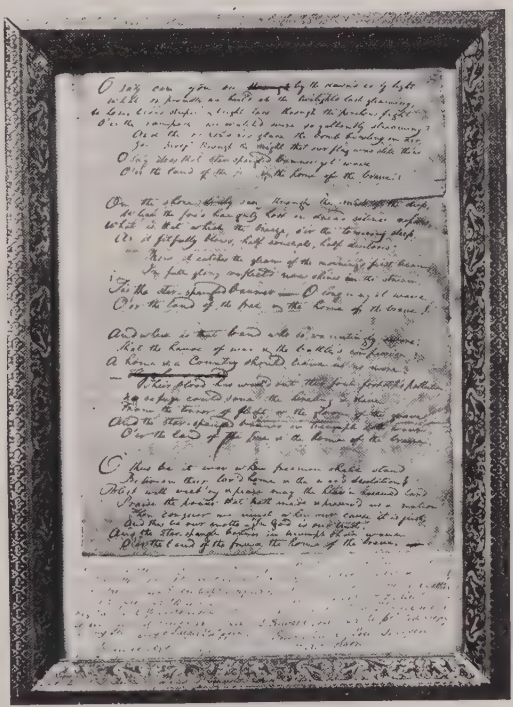


MORAVIAN COLLECTION, 1760

GREEN SILK UMBRELLA, FIRST BROUGHT TO AMERICA



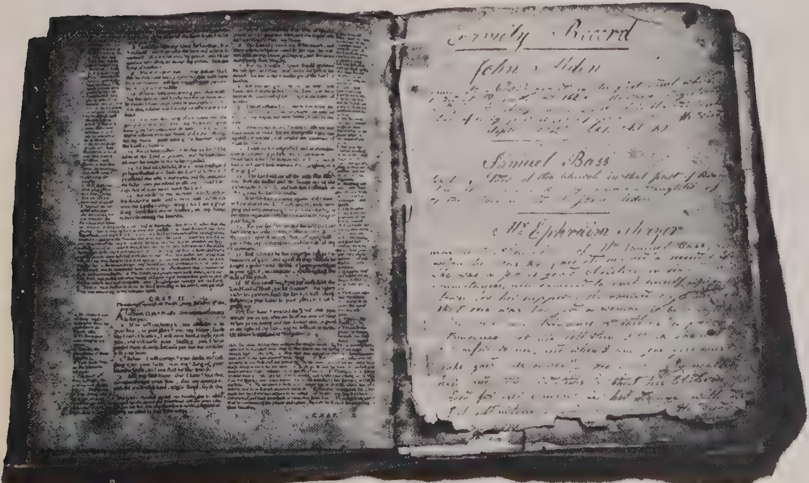
COMMODORE PERRY'S PITCHER



MANUSCRIPT STAR SPANGLED BANNER

CREAM PITCHER, LOVING CUP, AND TEAPOT

ELLERY RELICS AND CANDLESTICK USED BY WASHINGTON



JOHN ALDEN FAMILY RECORD

THE VERNON HOUSE

LADY MANAGERS' COLONIAL EXHIBIT, GOVERNMENT BUILDING

KITCHEN GARDEN, CHILDREN'S BUILDING

happy result we shall find an ample recompense for what we have done."

Thus has the Board of Lady Managers, in conjunction with state and foreign boards, representing the most advanced and enlightened views of woman's sphere and woman's work, presented a complete exposition of what women have done and are doing in the cause of their sex, in the cause of home, of education, charity, science, art, and in every branch of human endeavor, where is felt the all-pervading influence of woman's hand, and heart, and brain. Never before has been offered to the world; never before has been attempted so full and exhaustive a representation of feminine achievement, and capability. And especially do these collections illustrate the progress in this direction of the United States; for nowhere else have the disabilities of women been so largely removed; nowhere does woman play so prominent a part as a bread-winner, as a competitor with man in the several vocations wherein she is fitted to compete.

CRÈCHE, CHILDREN'S BUILDING

If in the United States the number of bread-winners is smaller than among European nations, it is because there is less need for them to earn their bread, though many do so from choice, or for what Burns has described as the glorious privilege of being independent. On the other hand there is no country in the world where the avocations of women are so diversified or so largely represented in commercial and professional circles. According to recent data there are nearly 3,000,000 women and girls who are self-supporting, many of them contributing to the support of others, and with at least an equal number who provide in part for their own maintenance. Of these more than 14,000 are at the head of business firms or conduct a business of their own, and 26,000 are employed as clerks and book keepers. Of school-teachers there are 155,000; of teachers of music and professional musicians, 13,000; of physicians and surgeons 2,400, and of chemists and pharmacists nearly 2,000. Of

ILLINOIS WOMAN'S HOSPITAL AND PHARMACY

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST

journalists there are 600, of authors known to fame about half that number, while more than 200 are practising lawyers or architects. But most remarkable of all is the number engaged in farming, planting, and stock-raising, in which pursuits no less than 59,000 women are represented. Such is the part that woman plays in the great workshop of our western republic, as, with the lapse of years, she rises slowly but surely toward the higher plane of her destiny.

One by one the disqualifications of women have been laid aside, their legal rights asserted, and acknowledged, so that in many of the states they share nearly all the political privileges and civic duties pertaining to citizenship. In Wyoming, Washington, and Utah women may vote and serve on juries; in Kansas there are municipalities where the office of mayor has been filled by women; in Pennsylvania they may be appointed masters in equity, and in New York, Massachusetts, Connecticut, and in several of the western states as notaries public, commissioners of deeds, administrators, and executors. By the general government they may be commissioned as post-mistresses, army surgeons, captains of steamboats, and even as United States marshals. With some exceptions, our leading universities have not been slow to recognize the claims of women to such opportunities for higher and special branches of education as are accorded to men. At many of the law schools, the schools of medicine, surgery, dentistry, music, and the fine arts, women are trained and graduated, one department only closing its doors against them, and that is the department of theology. Thus, it will be seen that women can no longer be excluded on the ground of mental inferiority, and those who would advocate such exclusion must do so on other grounds.

"Women," says Ariosto, "have risen to high excellence in every art whereto they have given their care." And never since these words were written has been presented, until this year of 1893, a complete exposition of what woman has done, and is doing in the great workshop of the world. Here is in truth a complete and life-like representation of woman's condition among all the nations of earth, one relating especially to the great army of wage earners, many of whom labor under adverse conditions, their task injurious to health, and their daily pittance barely sufficing for their daily bread. But here is also shown how women may find more congenial and profitable sources of employment, may learn how best to prepare themselves for new opportunities, and how to take advantage of them, each one according to her ability.

Of all the lessons of the Exposition there are none that will be longer remembered than those which the Woman's department has taught us, and to none is more credit due than to the Board of Lady Managers, forming, with its associated boards, an organization of women for the common benefit of woman-kind such as has never before existed in the history of the world. Theirs was the hardest task of all, and never perhaps was success more hardly won; never were the barriers of prejudice and apathy more difficult to overcome,

SEPTEMBER OCTOBER NOVEMBER DECEMBER

THE MONTHS, DEPICTURED ON SATIN IN THE FRENCH SECTION

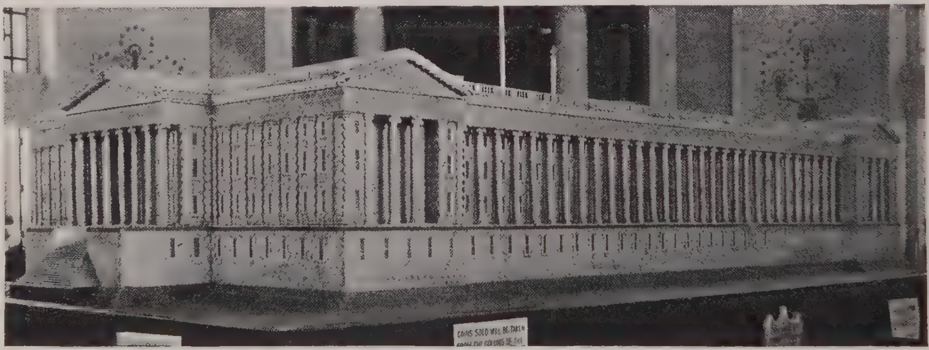
From oriental countries especially came most discouraging reports; for there were neither schools nor women with intelligence equal to the work. Many European countries were at first indifferent though later responding nobly to the invitation. Says the president of the Board: "We travelled together a hitherto untrodden path; we were subjected to tedious delays; and overshadowed with dark clouds which threatened disaster to our enterprise. We were obliged to march with peace offerings in our hands, lest hostile motives should be ascribed to us. When our invitations were sent to foreign lands, the commissioners already appointed generally smiled doubtfully, and explained that their women were doing nothing; that they would not feel inclined to help us, and in many cases stated that it was not the custom of their country for women to take part in any public effort."

But to the women of every land, to women who have near at heart the cause of their sex, who would not merely live a life of ease without a thought for their less fortunate sisters, personal letters were addressed soliciting their coöperation, and with most favorable results. Then it was that what had been merely a hope began to assume reality, and, continues the president, "our burdens were greatly lightened by the spontaneous sympathy and aid which have reached us from women in every part of the world, and which have proved an added incentive and inspiration." When first the Woman's building was designed, the managers were somewhat doubtful as to filling its space with creditable exhibits; but long before it was opened applications were made for four or five times the available room, thus permitting a selection of the choicest and most attractive specimens of female work. Most fitting it is that the best of these specimens, including the Woman's library, should find a permanent home in a memorial building, there to serve as a nucleus for still more valuable collections.

SEAL OF BALTIMORE

World's Fair Miscellany.—Adjoining the western vestibule of the Woman's building is a bureau where women are specially employed to furnish information or to act as guides through the grounds and buildings, and, if desired, through the city. The parlors and reception rooms were arranged and furnished with a view to the comfort and convenience of visitors, all of whom are permitted to use them free of expense.

In the rotunda of the Administration hall is a model of the treasury building at Washington, constructed of souvenir half dollars, twenty feet long, eleven in width, and four in height, placed there since the foregoing part of this work was put in print.


MODEL IN SOUVENIR COINS OF THE U. S. TREASURY BUILDING

The correspondence maintained by the Board of Lady Managers was second only in bulk to that of the department of Publicity and Promotion, and included in its scope all social, charitable, reformatory, educational, literary, and art associations, together with women's exchanges, unions, and alliances of whatever description, throughout the United States, and in many foreign lands.

It was early determined that awards in the shape of medals or certificates should be made by juries or examining boards, in token of merit only, and as an acknowledgment of progress in the art or craft represented in the exhibits.

For the sale of exhibits by individuals, woman's exchanges, educational unions and decorative art societies, a coöperative system was arranged, each association or individual paying its proportion of the expenses. Twenty per cent is charged on all sales effected by employés of the management. None of the articles sold could be removed until the close of the Exposition except through concession granted by the committee on ways and means, and all articles admitted for sale must either represent the original work of exhibitors or such as their work had largely increased in value.

The so-called golden nail, driven home by Mrs Potter Palmer at the dedication ceremonies, was made of pure copper, silver and gold. It was designed as the cross-bar of a brooch fashioned in the form of a shield representing Montana's state seal and coat of arms. In the foreground is a waterfall, behind which is a range of mountains wrought in copper, and encircled by a sunset effect in gold. The brooch is enclosed in a band of gold, with a farmer and prospector on either side, the former grasping a golden rake, and the latter a golden pick. In the centre, between these figures, is a Montana sapphire, appearing like a star in the sky depicted beneath. At the conclusion of the ceremonies the nail was withdrawn, returned to its place behind the brooch, and both were presented to Mrs Palmer. The hammer used on this occasion was a handsome piece of workmanship furnished by the women of Nebraska.

Forty thousand souvenir coins, with a face value of a

HARRIOT'S HISTORY OF ROANOKE ISLAND

quarter of a dollar, were issued from the government mint for the use of the Board of Lady Managers. On one side is a woman with a distaff, the figure encircled by the inscription, Board of Lady Managers, Columbian Quarter; on the reverse side a profile of Queen Isabella, after whom the coin was named.

At a meeting of the Board of Lady Managers, on July 31, 1893, it was resolved to establish a building fund for the erection of a permanent structure commemorative of the work of woman at the World's Fair. It was agreed to reserve as a nucleus for the fund the premium realized from the sale of the Isabella souvenir coins, amounting to $30,000, and to this sum Mrs Potter Palmer added her salary, amounting to some $9,000.

Affixed to all the official documents of the New York Board of Lady Managers is a seal which recalls an oft-told tale in connection with the Columbian discovery, yet one which women love to repeat. The design represents an Indian woman standing upon a rocky shore, gazing anxiously seaward, and waving a torch high above her head, thus idealizing the story that the light which Columbus saw was the signal with which an Españolan spouse beckoned homeward her belated lord.

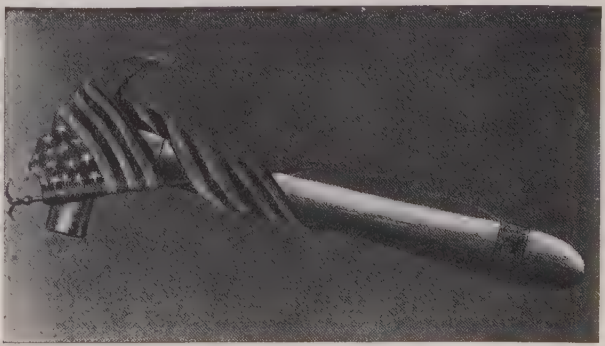
The collection of antique and other laces in the Italian section is one of special interest, representing, as it does, a history of the art of lace-making from its earliest inception. This forms one of the most valuable collections extant, many of the specimens being worth from $12 to $80 a yard according to width and pattern. There are also copies of historic laces, including some of the queen's laces, one of them presented to her niece, the Princess Letitia Buonaparte, on the occasion of her marriage to a younger brother of the king.

Worthy of note in the educational section is an exhibit by the Pratt institute, of Brooklyn, including rugs, draperies, portieres, wall-papers, and silver-ware, designed by its graduates, and manufactured by various establishments. Wood-carvings and costumes for women and infants were supplemented by various illustrations of the practical application of domestic science. Tests are given for detecting the presence of arsenic in paper-hangings, and upholstery, and of deleterious substances in baking powders, and washing fluids. Then there are charts of a model kitchen, and specimens of fine laundry work and pure soaps, with a collection of books containing information as to the various branches of domestic and industrial work.

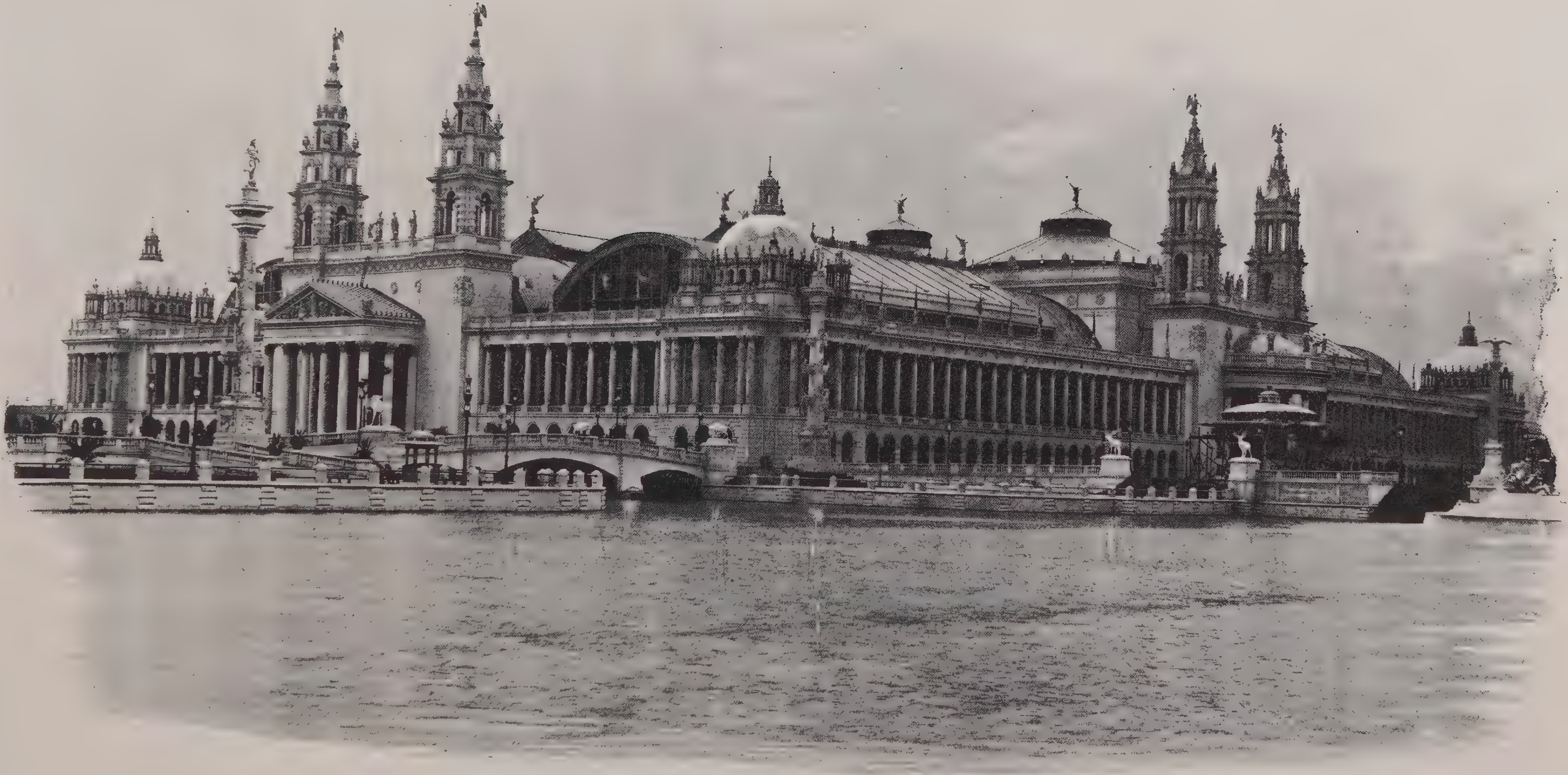
Kate Marsden, the English nurse of the Red Cross society, whose work among the lepers of Siberia, as elsewhere noticed, attracted so much attention, made a journey of many thousand miles by cart, sledge, boat, and on horseback, to find a certain herb said to be a specific for leprosy. On reaching the district where it grew, she found it to be of no value. The book describing her experience, and entitled *On Sledge and Horseback to Outcast Siberian Lepers*, created a sensation when published in London. Princess Christian presented Miss Marsden with the badge of the Royal British Nurses' association, and she was elected a fellow of the Royal Geographical society.

Mrs French-Sheldon, whose African expedition is mentioned in the text, travelled through the dark continent with a caravan organized and equipped at her own expense. She was unattended, as I have said, by any of her sex, her party consisting of 200 porters, who carried the provisions and outfit, with presents for distribution among the tribes. The palanquin in which she lived and wrote is displayed in the Transportation building, and most of the curios collected during the journey are in the ethnological section of the Woman's department.

CHILDREN'S BUILDING



THE HAMMER AND LAST NAIL



PALACE OF MECHANIC ARTS

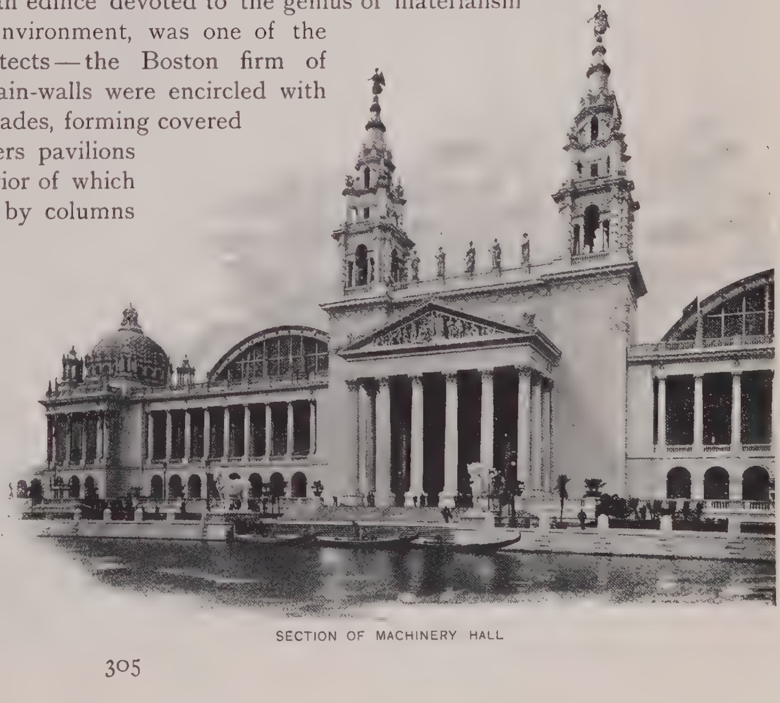
CHAPTER THE TWELFTH

MACHINERY

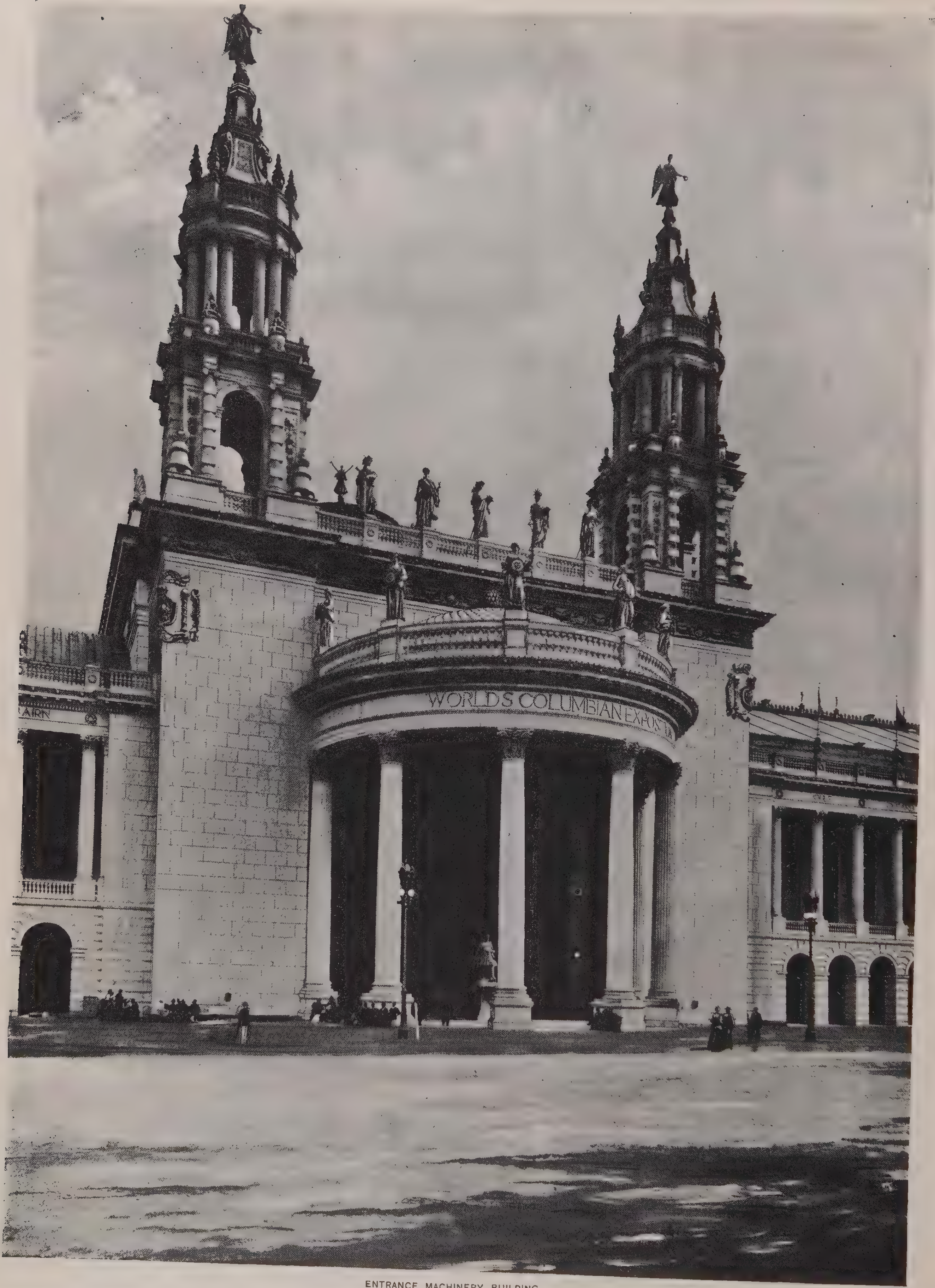
SOUTH of the Administration building, fronting 350 feet on the main avenue, and with a depth of 500 feet, is the Palace of Mechanic Arts, or as it is more commonly termed Machinery hall, covering, with its annex, more than seventeen acres. While less than one third the size of the Manufactures building, this edifice, apart from its annex, has more than double the dimensions of the national capitol, or of the parliament houses at Westminster. The three main interior divisions resemble somewhat as many railroad sheds placed side by side, each with a conical roof 100 feet in height, supported by arched trusses 50 feet apart. Around this triple hall is a gallery 50 feet wide, and through its centre runs a transept, 130 feet in width. The internal arrangement is admirably suited to the purpose, with a structural design so simple as in a measure to dispel the sense of perplexity caused by a vast display of machinery in motion.

For a building intended for such purposes the foundations must be especially solid. To support the machinery the heaviest and most massive substructures were laid at brief intervals, each of the iron trusses that support the roof resting on huge wooden blocks placed cross-wise, bolted, and supported by poles. The entire edifice rests on a foundation of planking and trestle work, its frame being mainly of wood, while the trusses are of such width that, after serving the purpose for which they were fashioned, they may be used in the construction of railroad sheds.

How to give to this prosaic structure an exterior design in keeping with the remainder of the group that surrounds the great quadrangle, to impart to an edifice devoted to the genius of materialism an air of beauty and harmony befitting its environment, was one of the many problems which confronted its architects — the Boston firm of Peabody and Stearns. First of all, the curtain-walls were encircled with two-storied porticos and with Corinthian colonnades, forming covered walks around the four sides. At the corners pavilions were formed, each 50 feet square, in the interior of which were placed large double stairways inclosed by columns supporting an interior dome. Above this is a large exterior dome, resting on a circular podium, and at its top a lantern. In the centre the main façades are broken by a plain wall surface, carried to a greater height, and finished with a level cornice. On either side of this surface are towers, also accessible by staircases, and above them turrets built in stories and of octagonal shape, each of the topmost stories being almost spiral in shape, and crowning a loftier monument than that on Bunker hill. Between the towers are intermediate pavilions, the one facing the main court



SECTION OF MACHINERY HALL



ENTRANCE MACHINERY BUILDING

containing a portico with semi-circular entrance way of the Corinthian order, crowned with a low half-dome, and with a statue over each of the columns.

Says one of the artificers of the Fair, in commenting on the design: "The long level sky-lines of these great façades, thus broadly accentuated at the corners by domes, and in the centre by the aspiring lines of twin towers nearly 200 feet high, were devised to form an engrossing foreground to the long higher roofs of the triple naves behind, broken by masses of decorative skylights and by the three low conical roofs of the main central transept. On the shorter front these naves present their glazed circular ends behind and above the façade in the manner used in the great Roman baths. In this way every principal feature of the main structure is made to play a noble and expressive part in the decorative scheme. The details of this design have been kept in rigid conformity with classical and scholarly traditions, relieved in parts by motives suggested by the highly ornate renaissance of Spain. Enriched profusely with sculpture and emblematic statues, and with effects of decorative color behind the open screen of the porticos, this composition, if it does not succeed in revealing the mysterious relationships between machinery and art, may at least stand as a beautiful model of highly organized academic design devoted to modern uses."

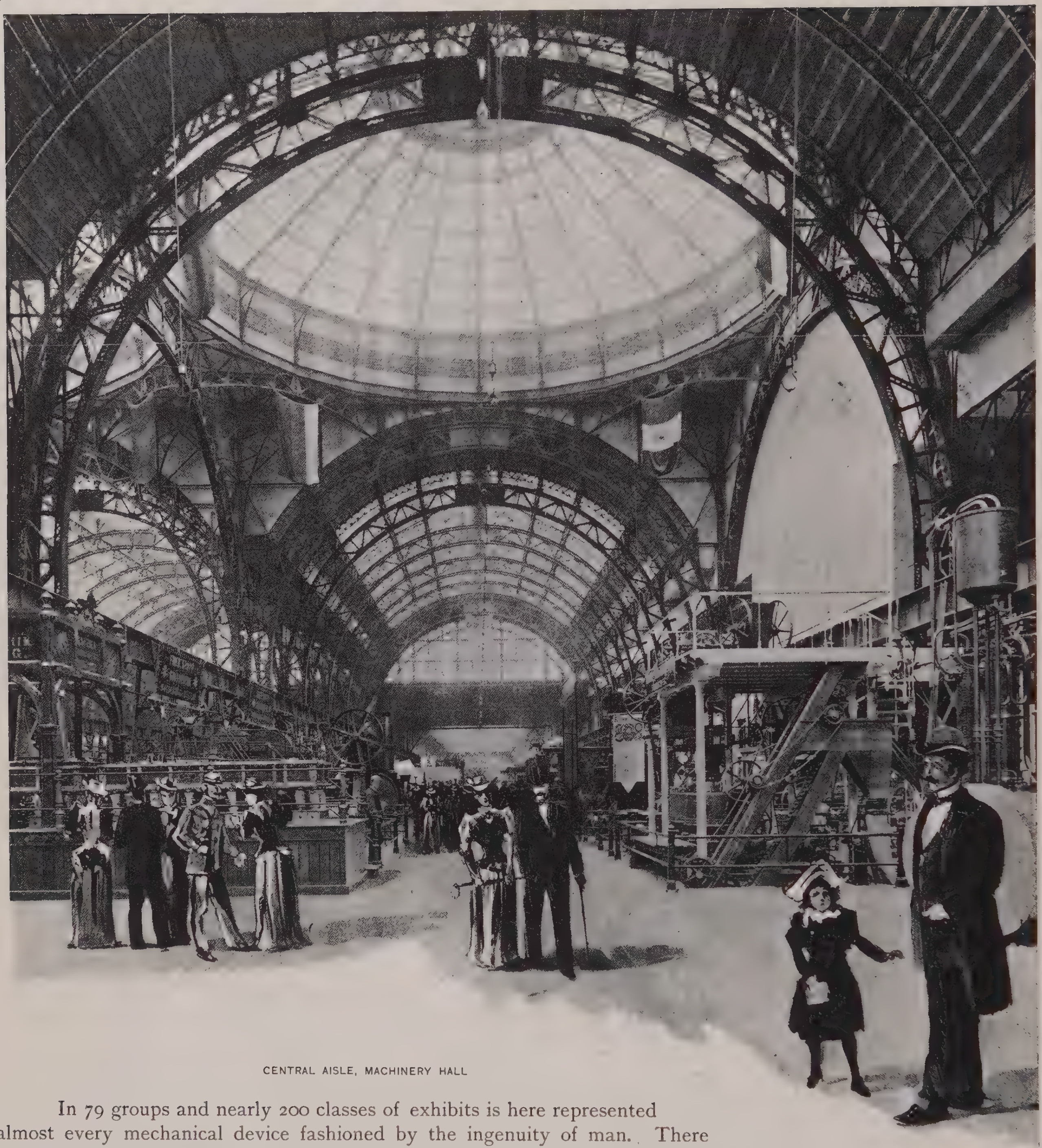
STATUARY ON THE COLONNADE

Over the eastern doorway Columbia sits enthroned, in her right hand a sword, and in her left the olive branch of peace. Near her stands Honor, holding a laurel wreath, and from the steps of the throne Wealth is scattering flowers and fruits from a horn of plenty. On either side inventors and mechanics are submitting their work to judges selected from many nations. At the corners of the main pediment are lions, typical of brute force, subdued by two young children, symbolic of human genius. Above them is a group representing Science and the Four Elements, this being repeated over the northern entrance way, and beneath it, figures bearing escutcheons, on which are portraits of prominent inventors.

To the visitor whose tastes incline to mechanics the Machinery department is one of the most attractive features of the Exposition. That both as to size and quality the display is worthy of the occasion we have sufficient evidence in its many acres of exhibiting space, covered with specimens culled from old and new world centres of industry, the American manufacturer vying with the European, and each country striving to demonstrate that its artificers are among the foremost of their craft.

COLUMBUS STATUE, NORTH ENTRANCE

THE LOGGIA, MACHINERY HALL

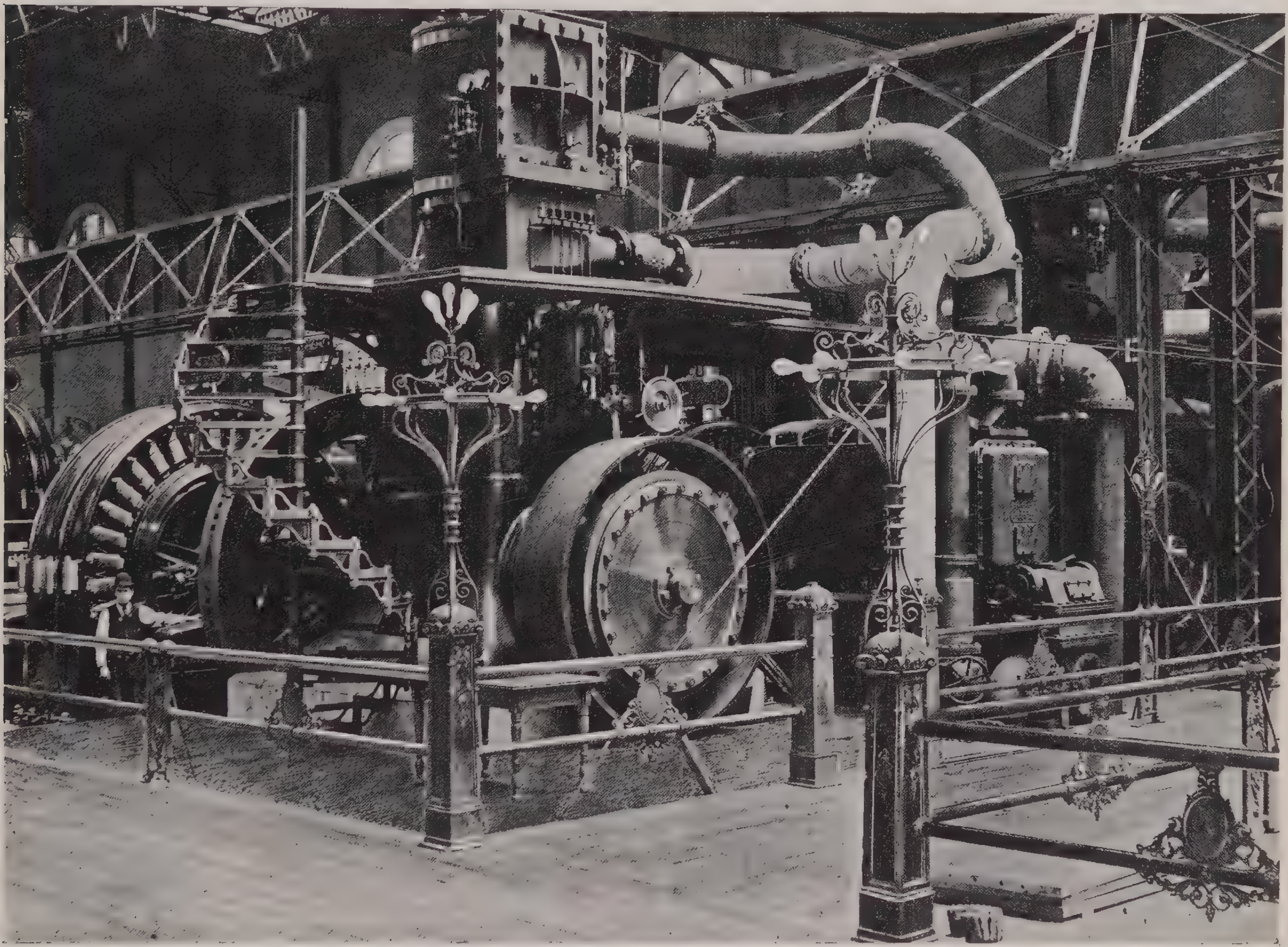


CENTRAL AISLE, MACHINERY HALL

In 79 groups and nearly 200 classes of exhibits is here represented almost every mechanical device fashioned by the ingenuity of man. There is machinery for the transmission of power, whether by electric, steam, hydraulic, or pneumatic apparatus; there are machinery and appliances for the manufacture of textile fabrics, for the preparation of various articles of food, for type-setting, printing, binding, stamping, embossing, and other branches of book and newspaper work; there are machines, apparatus, and tools for lithography, color printing, photo-mechanical and other mechanical processes of illustrating; for working metals, minerals, and woods. Finally there is a collection of fire engines and fire extinguishing appliances, whether by water or chemical apparatus, with machines and implements for many miscellaneous purposes, from shaping the head of a pin or the eye of a needle to the construction of a watch.

In the sections occupied by the United States is a complete illustration of the inventive skill of her mechanics, who within the last half century have revolutionized many branches of industry, and created many new ones. In all these inventions the tendency has been to increase the quantity and improve the quality of products, while dispensing as far as possible with manual labor and rendering processes more and more automatic. Thus it is that the value of production per capita of the operatives employed has more than doubled within forty years, and even within the last decade shows a considerable addition. This has been accomplished not only without detriment, but with material benefit to the wage-worker, whose average earnings have increased more than forty per cent since 1850, and with a three or four-fold gain in the number employed.

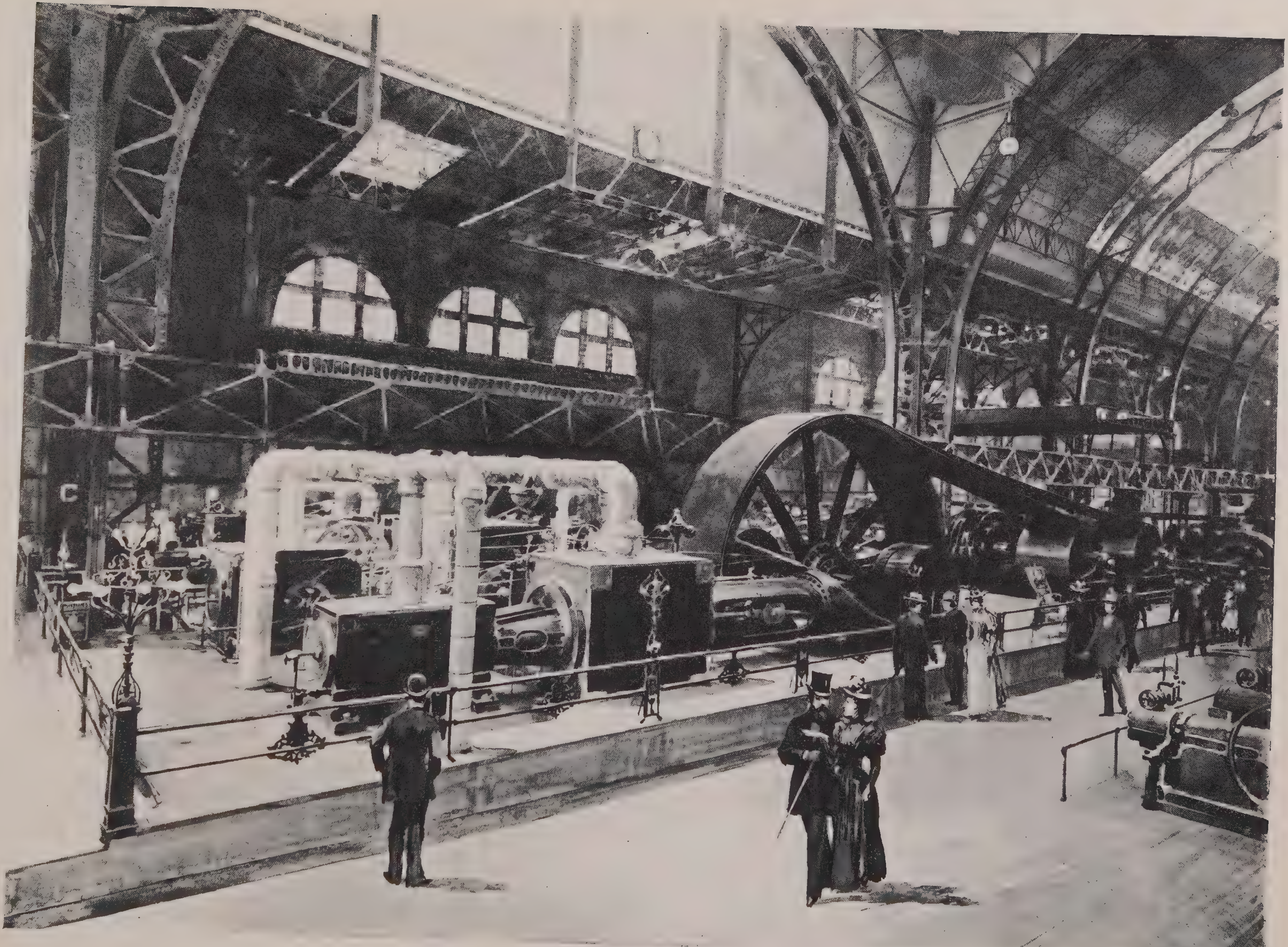
Of the twenty or more branches of manufacture whose output exceeds $10,000,000, by far the largest is that of iron and steel, the value of which, including the unwrought metal and the machinery and apparatus into which it is made or partly made, is probably not less than $1,200,000,000. Of this amount perhaps $400,000,000 represents the value of iron and steel, $500,000,000 of machinery and manufactures, and the remainder that of railroad tracks, rolling stock, and agricultural and other implements and appliances constructed partially of steel or iron. Under the stimulus imparted by improved machinery, whereby many articles are produced at little more than in former years would have been the cost of the raw material, the total value of all manufactures has increased more than seven-fold within two-score of years, affording employment or support to about one-fourth of the entire population of the United States. Such is the good work that machinery has wrought, since, in the later colonial period, it ceased to be regarded as a special invention of the devil, since the days for instance when Thomas Barnard preached before a Boston society for the encouragement of industry his "manufactory sermon," declaring that "an industrious prosecution of the arts of civil life was very friendly to virtue," and urging his people to make such progress in manufactures as would enable them to produce at home what they imported from foreign lands.



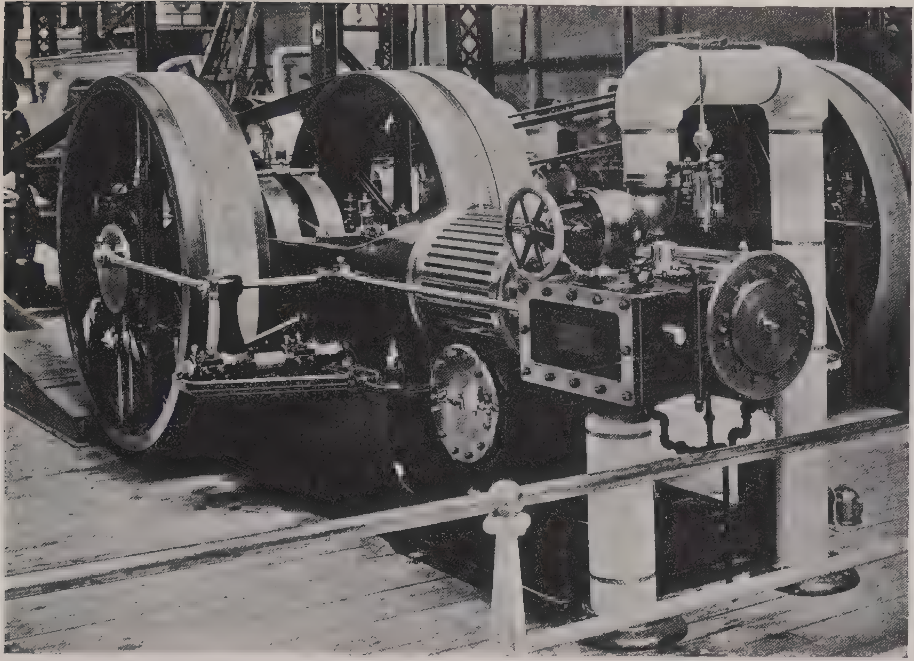
WESTINGHOUSE ENGINE

Along the southern walls of Machinery hall extend two corrugated iron structures, in which is generated most of the power whereby the buildings and grounds and the great fountain in the central court are supplied with electricity, the power that runs the Administration elevators, furnishes exhibitors with motive force, drives the sewage of the Fair toward the lake, and sets in motion some of the machinery in the hall itself. This primary power plant, known as the boiler-house, is adjacent to the main building, the smaller section, on the other side of the southern entrance way, being called the boiler-house extension. Adjoining these and contained within the main hall and its annex are the 70 engines and 130 dynamos which complete the plant, one fully in keeping with the colossal proportions of the Exposition, and aptly termed the heart of the Fair. Of the 26,000 horse-power developed by its 54 boilers, fully two-thirds is transmitted to the engines and dynamos which generate electricity.

Passing along the galleries of the boiler-houses, on a level with the floor of Machinery hall and a few feet above the line of great furnaces, the visitor may notice that the stokers are attired in neat white uniforms, very unlike the begrimed and grease-stained garments characteristic of the craft. This is explained by the use of oil as fuel, conveyed in the Standard company's pipes from Whiting, Indiana, some forty miles distant.

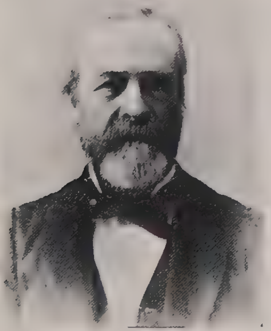


THE GREAT ALLIS-CORLISS ENGINE



TANDEM COMPOUND ENGINE

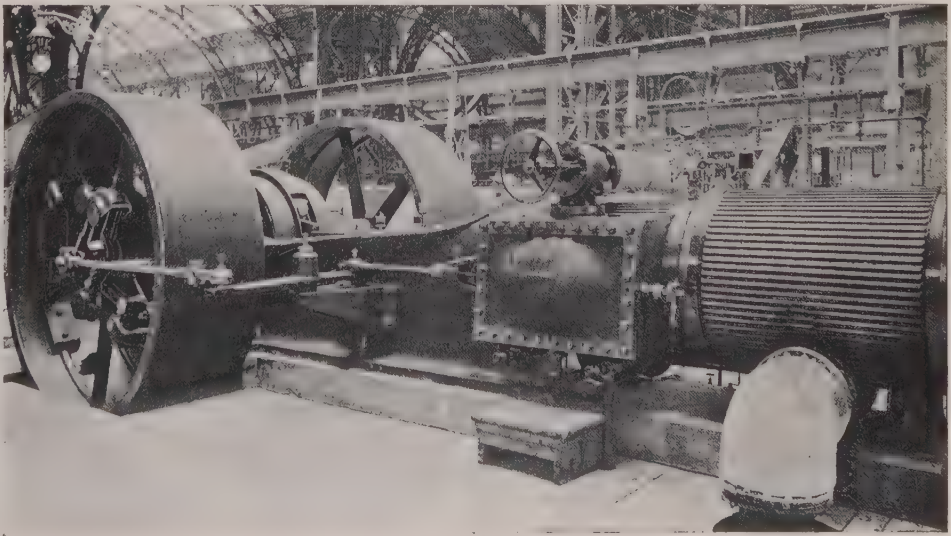
The oil is stored in iron tanks, enclosed in a massive brick vault in the south-eastern portion of the grounds, and with a total capacity of 112,000 gallons. This subterranean reservoir is in six compartments, each twice the size of the tanks, and thus is avoided or minimized the danger of explosion, should the grounds be swept by fire. Near by is the pump-house, from which, at a distance of more than half a mile, the oil is delivered as needed at the stand-pipe near the boiler-house. Each of the two pumps is furnished with a suction connection, by which, in case of accident at the boiler-house, the contents of the pipe may be returned to the storage tanks. The main lines of supply-pipes are enclosed in a heavy wooden box, covered by removable cast iron plates, with branches leading to the boilers which furnish power for the several groups of engines, presently to be described.



E. P. ALLIS

The boilers are all of the water tube type, which in brief consists of a bank of tubes a few inches in diameter, and a dozen feet long, inclined upward, and connected with a large steam drum or reservoir. The tubes are expanded at either end, and the entire apparatus is filled with water up to about the middle of the drum. As the steam is generated by the flames beneath, it passes from each pair or battery of boilers into one common pipe, which delivers it in turn to the headers, or reservoirs, located under the gallery floor. The water is then drained from the headers, and returned to the boilers for further use by a separate system of pipes. To boilers of this pattern it is claimed that even an explosion causes but little damage, since the enormous power which they generate is distributed between eleven or twelve thousand tubes.

Arranged with reference to the uses for which they are intended, the group of electrical engines is by far the most remarkable. The largest in this class is the quadruple expansion condensing engine, exhibited by Allis and company, of Milwaukee, and used in the operation of two dynamos with an aggregate capacity of 20,000 incandescent lights. With perhaps one exception, the entire mechanism constitutes the largest single electric-light plant in the world, and there is no stationary engine of greater size in existence. The engine itself is of 2,000 horse-power, and as to its dimensions, it may here be stated that the fly-wheel is 30 feet in diameter, length of shaft 17 feet, diameter of largest cylinder nearly 6 feet, and that it occupies some 3,000 square feet of floor space. Near the railing which encloses it are two faded yellow documents, framed, and under cover. One of them is the original contract awarded in 1796 to the firm of Boulton and Watt for the

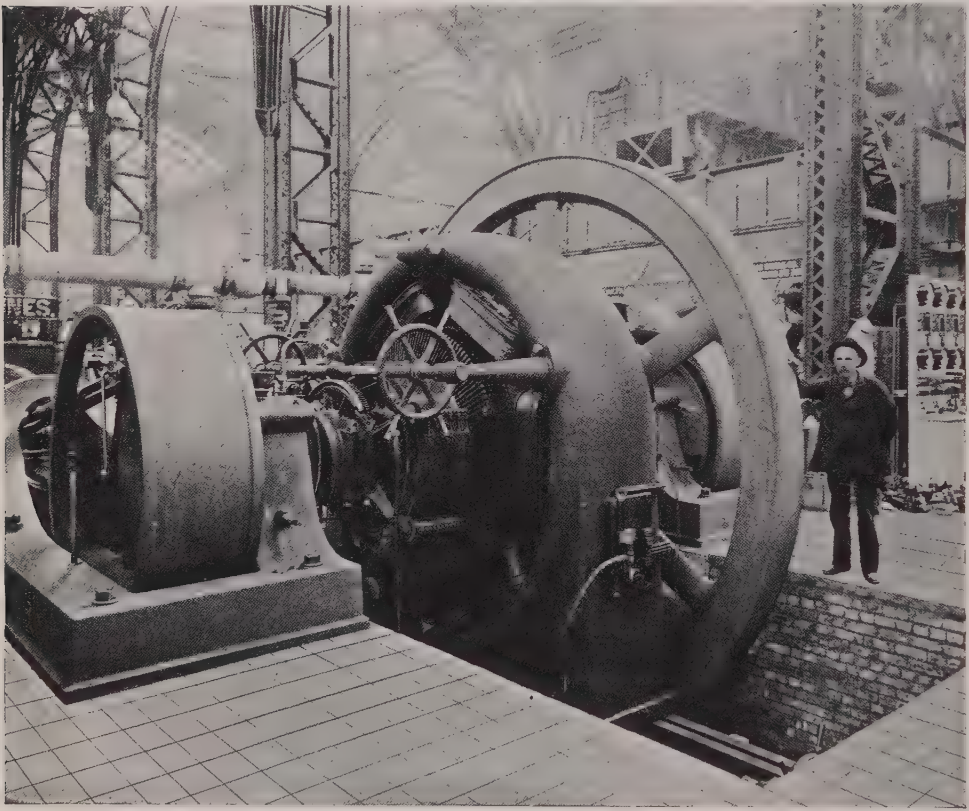


COMPOUND ENGINE

construction of a steam engine for the Birmingham Flour and Bread company, and attached to it is a schedule of some of the materials to be used.

The largest collection of engines in Machinery hall, or elsewhere in the Exposition, is that of the Westinghouse company, of New York, which alone has thirteen specimens of its workmanship, with an aggregate of more than 7,400 horse-power. It is worthy of note that among all the engine builders of the New England states, only two Rhode Island firms are represented, the middle and western states furnishing the bulk of the display. Among the more attractive exhibits is a small nickel-plated engine of Iowa manufacture, of cunning workmanship and perfect finish.

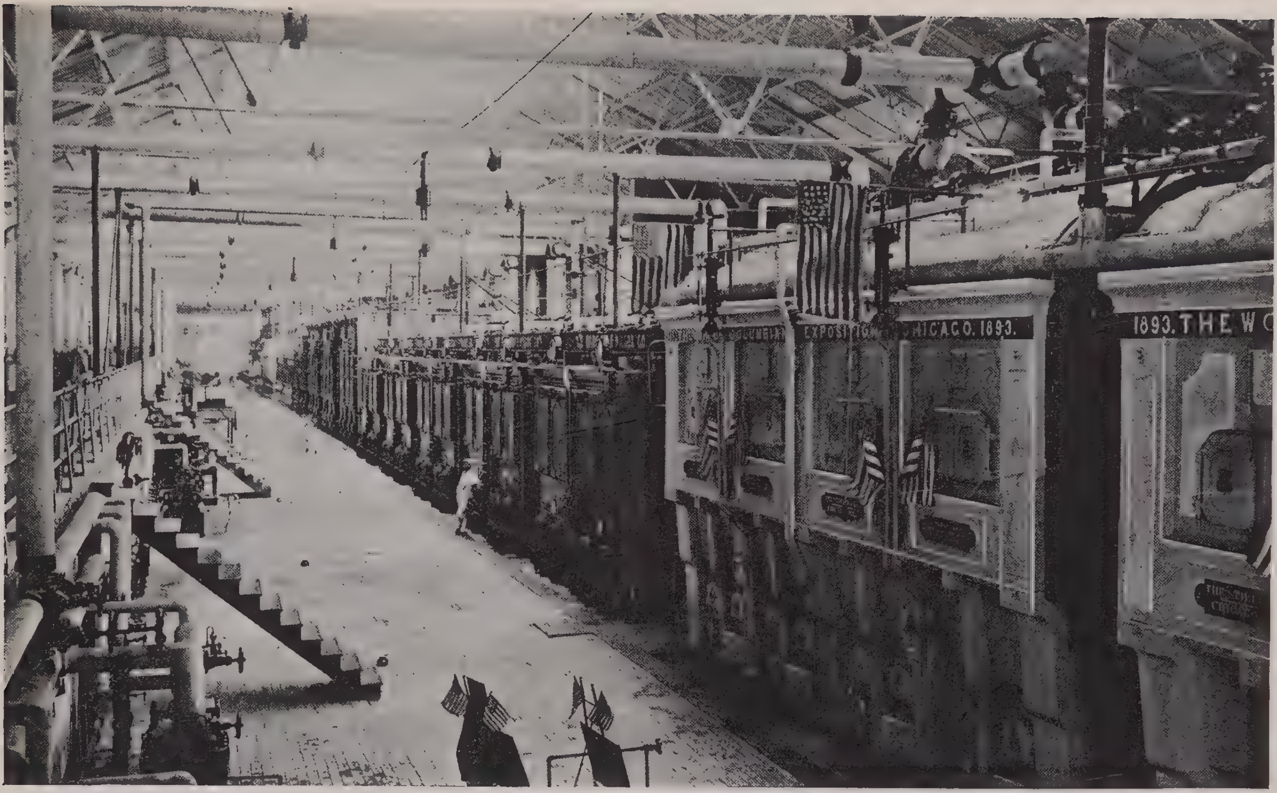
COLD FORGING PROCESS


WESTINGHOUSE GENERATOR

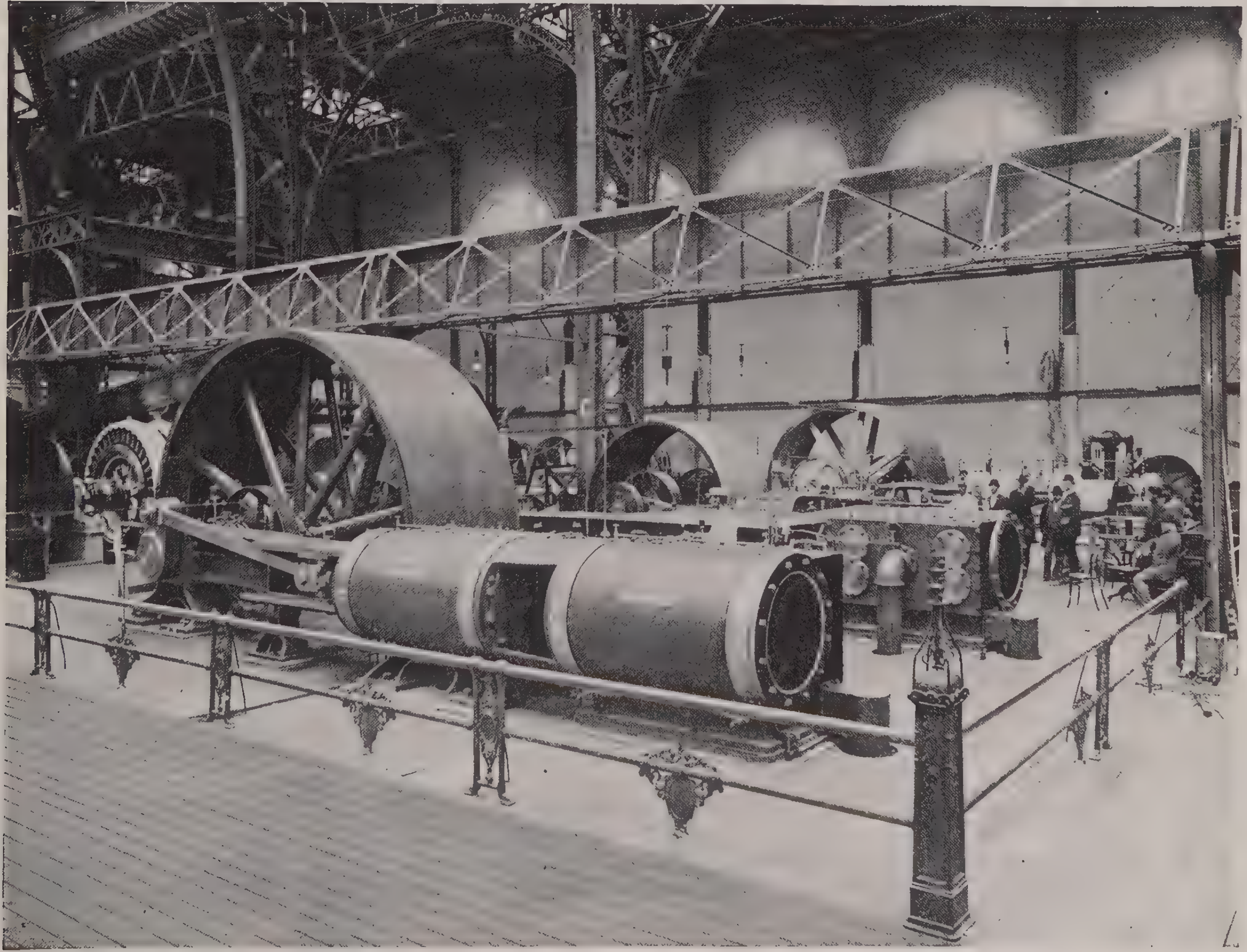
Compared with the engines which furnish electric power, and which in turn derive their motive force from the boiler plant, those that supply steam power or compressed air are of minor importance, the latter being mainly used by the elevators and certain of the locomotives in the Transportation building. Few of the mechanisms in motion within the hall derive their power from the regular plant, the main use of which is, as I have said, the generation of electricity, conveyed by underground wires to every portion of the grounds. Some fifteen engines, scattered through the building and acting independently of the power plant proper, drive six lines of iron shafts, each extending for a distance of 1200 feet along the main structure and its annex. By these shafts, revolving eighteen feet above the floor, power is furnished to exhibitors by merely throwing a belt over the one nearest to their allotted space. Engines of British and German make drive the machinery in their sections, and for the same purpose the United States division has several of home manufacture.

By several manufacturing companies are special exhibits of their appliances for the transmission of power, one firm using manilla rope, another, cow-hide, and a third, a stout duck fabric, in place of leather belting. But on all sides is the regulation shafting and belting, a New Hampshire company producing what is claimed to be the largest belt in the world,

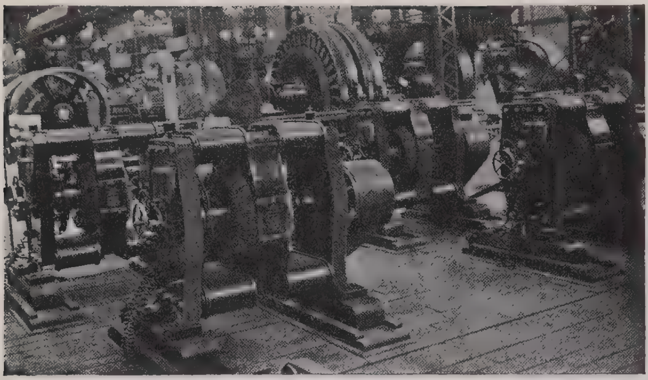
VALVES AND PIPES



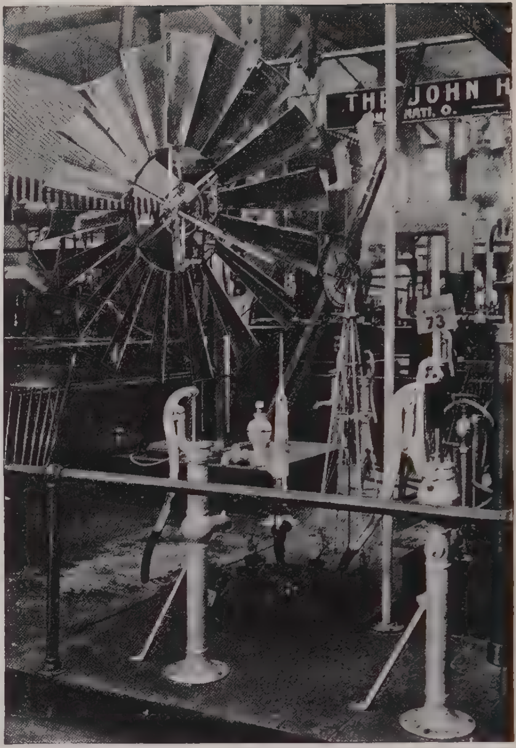
LARGEST BOILER HOUSE IN THE WORLD



BUCKEYE ENGINE COMPANY



WOOD'S DYNAMOS



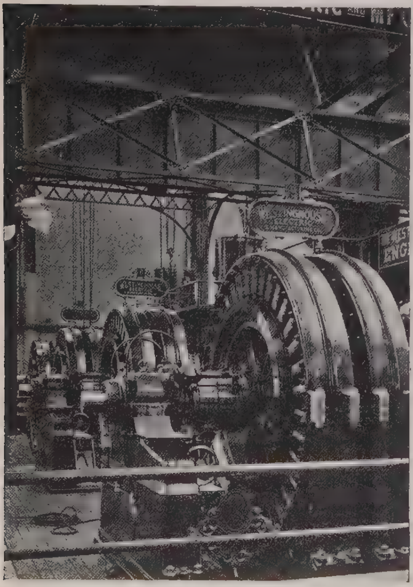
COPPER WIND MILL

more than 200 feet long, by eight and a half in width. It is fashioned in three-ply, oak-tanned, weighs 5,176 pounds, and in its construction there were used 569 hides.

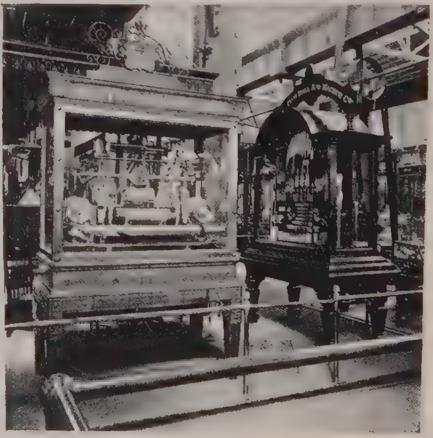
Hoisting engines of all descriptions are classed with motors and apparatus for the transmission of power. Perhaps the most remarkable of this group are the travelling cranes, operated by electricity, three of them in Machinery hall, and one in the machine-shop south of the annex. The latter can haul a weight of from ten to fourteen tons, swing its load aloft, and raise or lower it, all without jar, and with scarcely a tremor. Its motions are readily guided by a single workman, or even by an intelligent boy. The other cranes are of mammoth proportions, as in truth they must be, for during the installation process they placed in position all the more massive machinery. Their present use is to carry passengers to and fro, for which purpose they are suitably equipped. Each of them has a span of 75 feet, the tracks being laid on plate girders, and supported by steel columns about twenty feet high. The supporting structures are designed for a load of more than forty tons for each end of the crane, which travels at the rate of some 300 feet a minute. At the western end of the annex is a balcony, reached by several elevators, the latter forming of themselves an exhibit by the Crane company.

In the line of hoisting machines the United States has the only display. Some of the engines are especially used in building, the cranks being so constructed that a heavy load can be raised or lowered with remarkable smoothness and rapidity. Others, designed for bridge construction, are so fashioned that all friction may be avoided. Quarrymen may also inspect the engines or models best adapted for their work, some of them having masts and booms by which a weight of ten or twelve tons may be readily lifted and moved in a straight or circular line. Many of them are worked by electricity, and are controlled at will by a single engineer, herein being a forcible illustration of progress in the invention of labor-saving machinery.

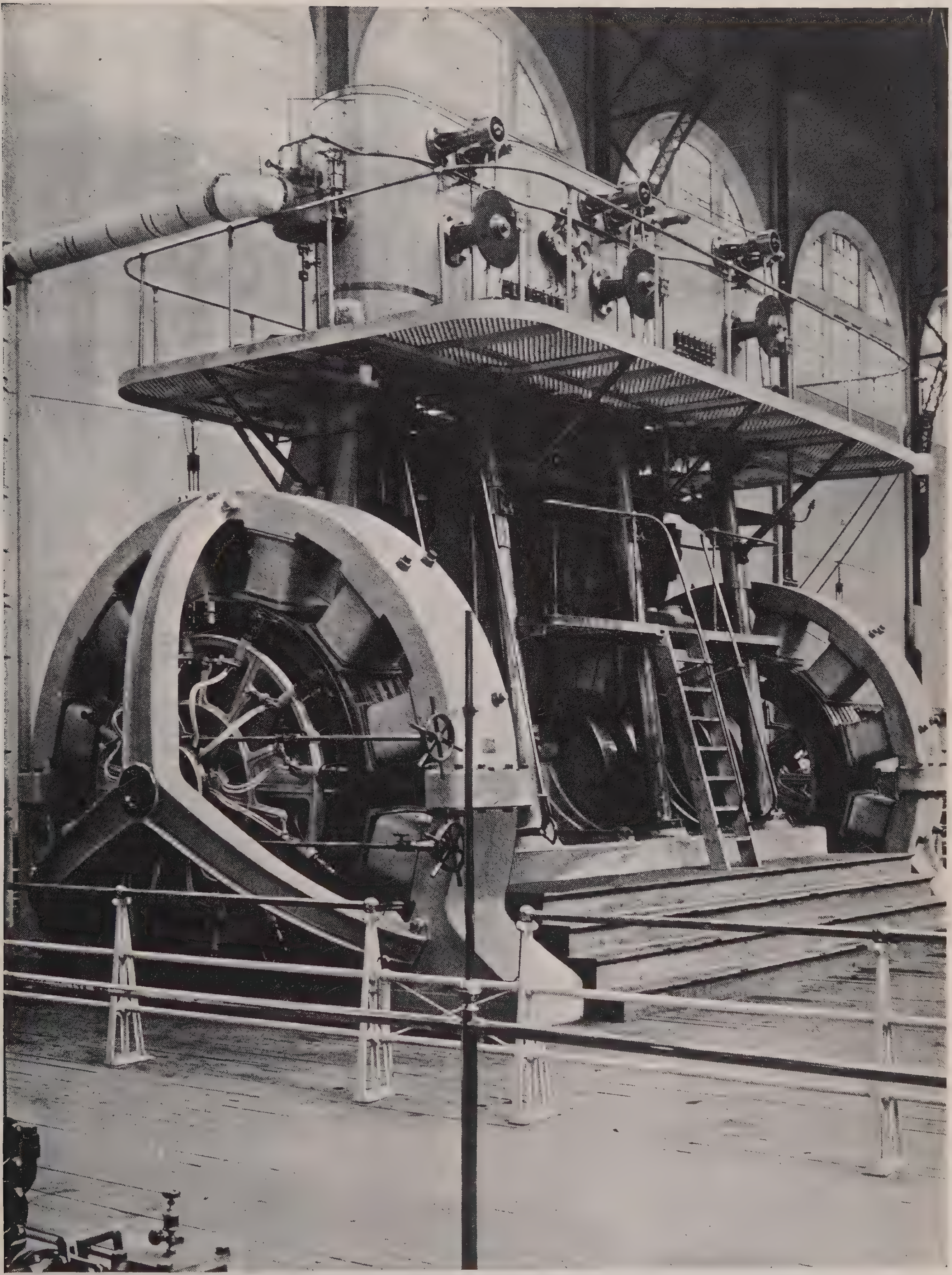
The exhibit of pumping engines, also included in this class, is grouped around a basin of cement filled with water, and placed at the junction of the main hall and its annex. There are about fifty exhibitors, by whom are shown all kinds of machines, single, duplex, horizontal, and vertical, iron and wooden pumps, hand pumps and those operated by compressed air and steam, pumps for the farm-yard and others adapted to artesian wells. To demonstrate their several qualities the exhibitors depend upon the central reservoir, from which are drawn and returned its contents according to the power with which the pumps are supplied. One powerful force pump discharges into a large wooden trough; others send columns or sprays of water into the tank, and a Cincinnati firm has erected a shapely fountain, around which its air compressors and steam pumps smoothly perform their offices. An Illinois company displays an aerating pump which forces air to the bottom of a cistern, thus



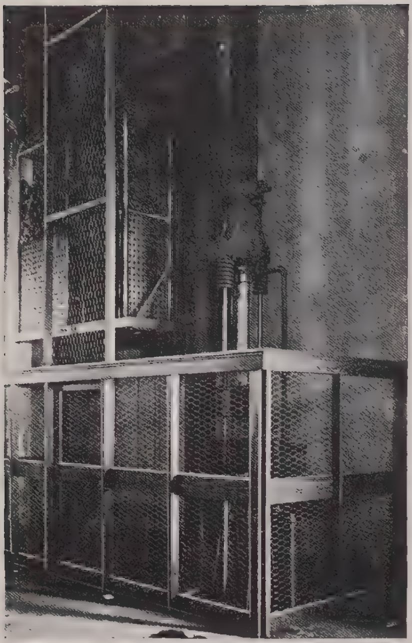
WESTINGHOUSE DYNAMO



TWIST DRILL EXHIBIT



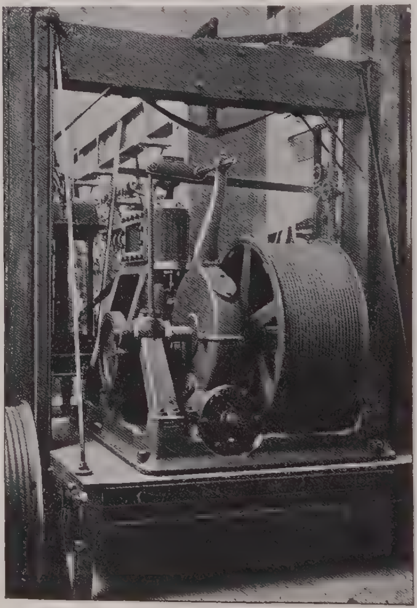
EDISON ENGINE AND DYNAMO



CRANE ELEVATOR

purifying the water; and a Pennsylvania establishment has on exhibition a steam-pump that will raise water from a depth of 500 feet, designed for the use of factories, mines, and irrigating systems. Of windmills there is only a single specimen; but there is a special out-door exhibit of windmills in connection with the Agricultural department, and especially of such as are used for farming purposes.

Adjacent to this section are the soda-water apparatus, apparatus for drawing beer, and for bottling and corking. By one firm is displayed its methods of carbonizing soda and mineral waters, champagne and other wines, and by another a machine for washing and rinsing beer bottles in one operation. Among the miscellaneous articles included in this group are iron and other metallic pipes, tubes, and fittings, stop valves, cocks, and such accessories for transmitting power. Under the heading of hydraulic and pneumatic apparatus is diving and refrigerating machinery. In the United States section there is no general exhibit of diving apparatus; but in the Midway plaisance experiments are shown in deep sea diving, illustrating the uses of modern appliances, including the workings of the sub-marine bell telephone. The largest exhibit of refrigerating apparatus and machines for making ice was installed outside the building, in the Cold Storage plant, elsewhere described in this chapter, together with its destruction by fire. In separate structures also are the exhibits of a Chicago firm in connection with the Waukesha Hygeia mineral springs company, and of a New Orleans factory; but within the hall is the 150 ton refrigerating machine of a New York firm, with double acting compressor.



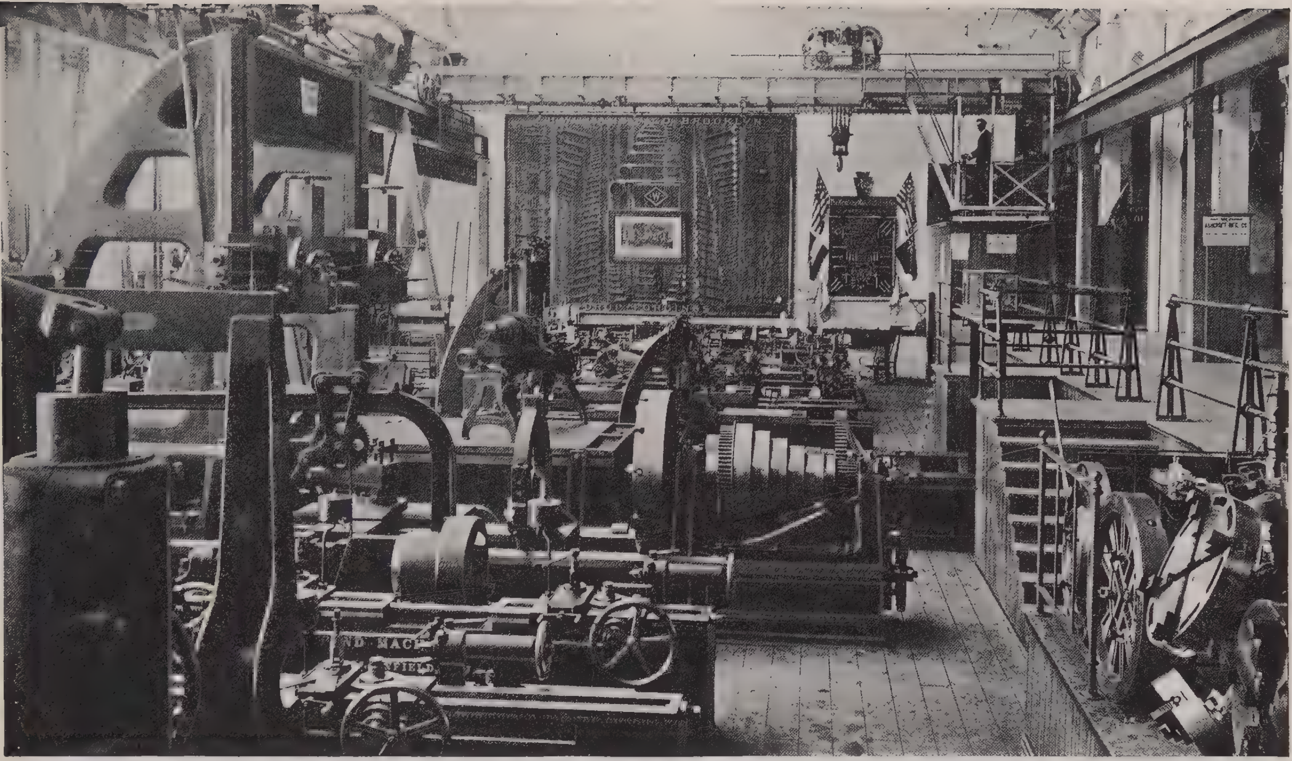
HYDRAULIC ELEVATORS

In the annex, west of the engines which form a portion of the power plant, is a small collection of apparatus for extinguishing fires. The only display of large fire engines is by a company at Seneca Falls, New York; but several Chicago houses show the latest inventions in chemical apparatus, and hand grenades. The remainder of the group consists of hose, nozzles, couplings, water towers, and models of fire-escapes, among the last of which one of the most practicable contrivances is a cage moving on an inclined ladder, supported by an upright, the crank that propels the escape being wound by operators below. Most of the exhibiting firms in this department have installed their apparatus in the fire stations distributed throughout the grounds, and at the fire above referred to many of them were put to the test.

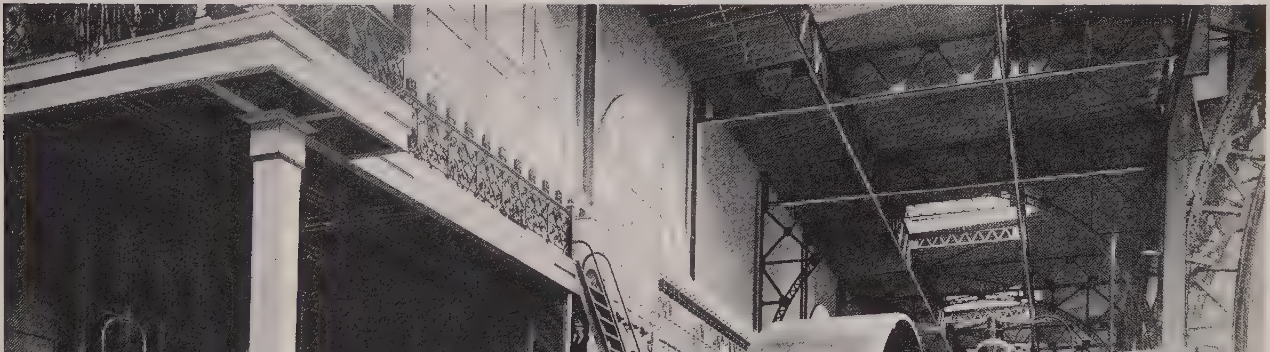
The largest of the miscellaneous exhibits is contained in the western portion of the annex, overflowing thence into the model machine-shop south of it. The latter was furnished entirely by a New York and Chicago company, for the purpose of displaying the specialties of manufacturers for whom they are agents. Here also the several firms with which the company has dealings exhibit specialties of their own, as forgings from iron, steel, copper, and bronze, lathes, vises, planers, drills, and punching and shearing devices. One of the exhibiting companies has a contract with the government for furnishing the army and navy departments with more than $1,000,000 worth of turning, boring, and rifling lathes.

Beyond the machine-shop, and in the body of the hall, is an extension of this exhibit, where not only machinists, but steam fitters, blacksmiths, and tinsmiths may examine the most improved appliances of their trades, and at times may see them handled by skilful craftsmen. Included in this collection are riveting machines, shears for cutting sheet metal, hydraulic forging presses, power hammers, milling machines, portable forges, drills, planers, pneumatic pressing machines, and special machinery for making car pins and wheels, and the various parts of locomotives, marine boilers, and metallic bridges. A Trenton factory has its own brand of anvils and vises, and claims to be the oldest establishment of the kind in the United States. From the mint at Philadelphia comes

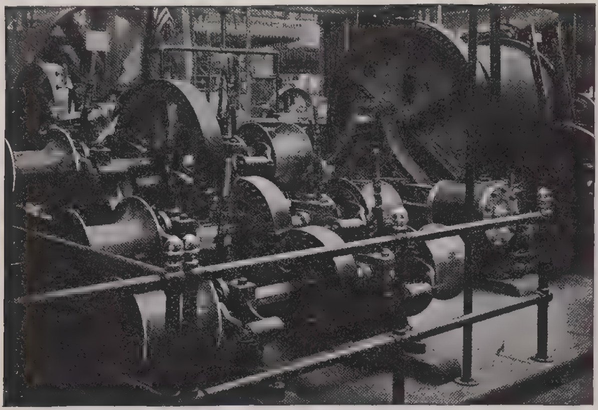
THE LARGEST BELT IN THE WORLD



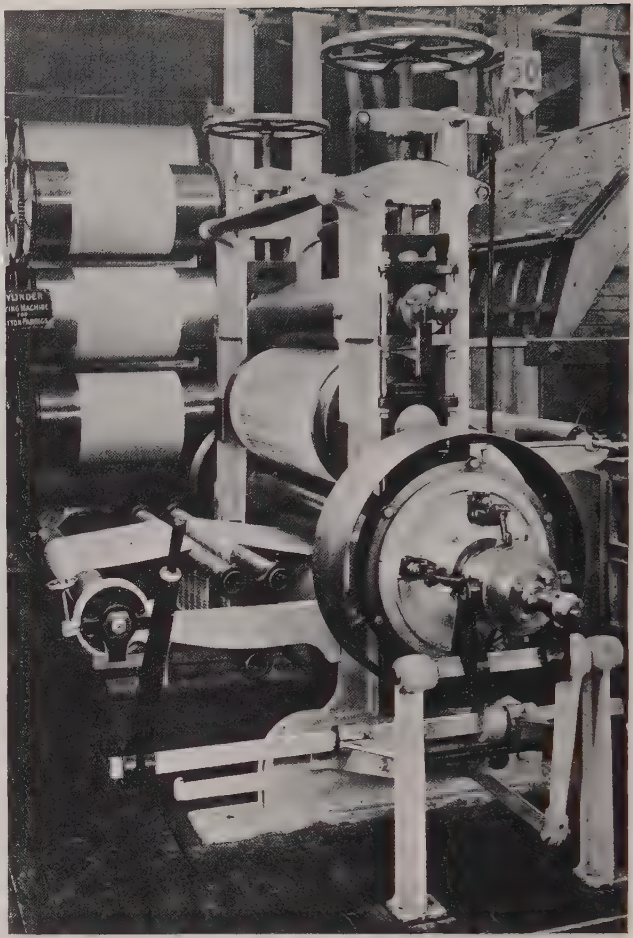
MODEL MACHINE-SHOP



TRIPLE EXPANSION ENGINE



HOISTING ENGINES



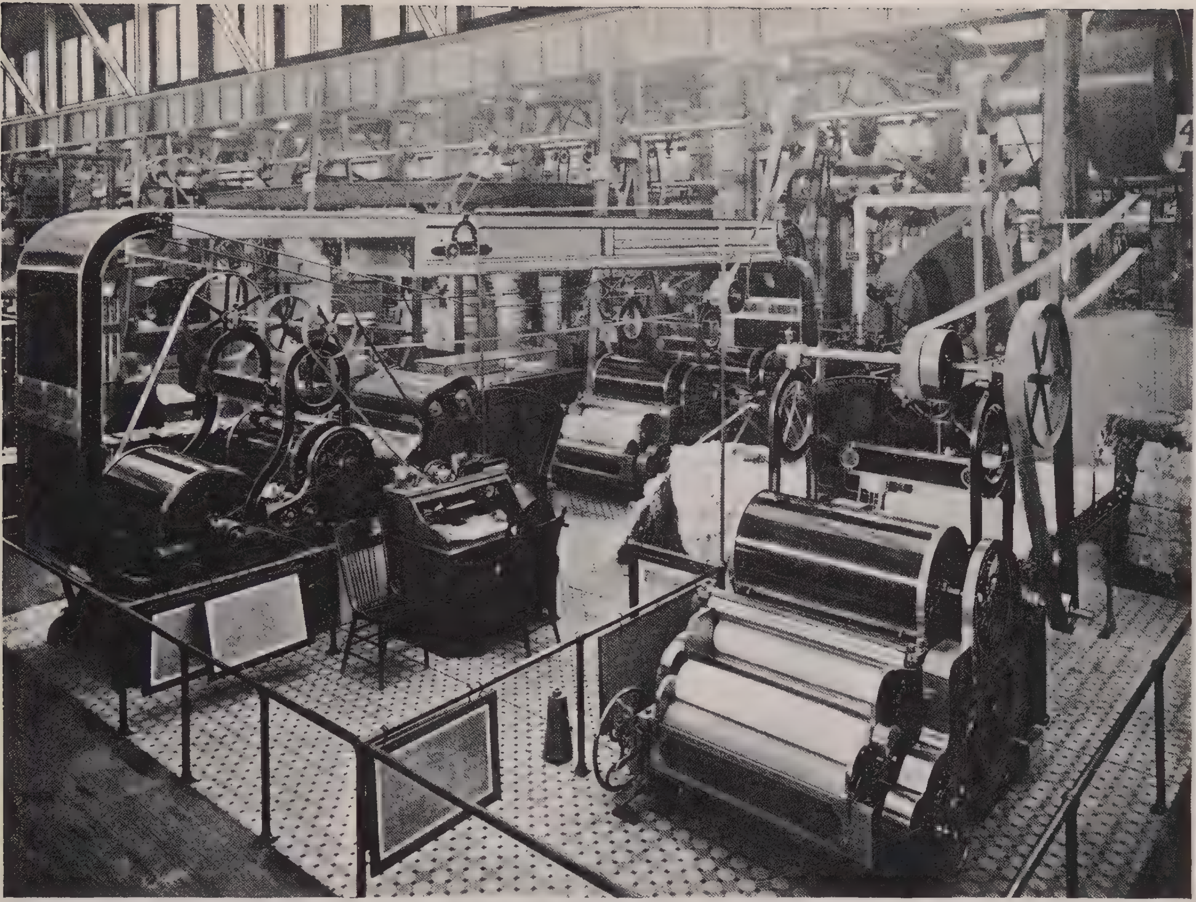
COTTON CALENDERING AND DRYING MACHINE

the first steam coining-press used by the government, and among other interesting exhibits are machines which transform solid bars of steel into wire netting for gallery fences and for use as substitutes for lathing, with such as make hooks and eyes, chains, and steel fence posts.

Of machinery for the manufacture of textile fabrics and clothing, there are more than 70 exhibits in the north-western section of Machinery hall. In the former class are included not only apparatus for the production of silks, cottons, linens, and woolens, for carpets, tapestries, laces, and embroideries, for ropes and twines, and other fibrous products, but such as is used for the making of paper, felt, and rubber goods, and for the preparation and working of leather. Here may be studied the various stages of textile manufacture in all its branches, and especially in the operation of the looms, not only by way of illustration, but in the production of goods to order, forming an attractive and realistic working display. Silks, for instance, of intricate figures, are fashioned before the eyes of the observer by processes in which are still retained, though with many improvements, the principles evolved by Joseph Marie Jacquard, whose invention brought on him first the maledictions, and then the homage of Lyons silk-weavers.

Very noticeable are the improvements made in looms of the Jacquard pattern, even within the last decade. Among visitors to the Fair are those who still remember the first of these looms exhibited in Chicago, not many years ago, at a local exposition held on the lake front. Though a huge and cumbersome piece of mechanism, it performed many wonderful feats, or such they seemed to the throngs that gathered around it, producing, for instance, exposition badges and portraits of General Grant, all of them woven in silk. In contrast with it are those of modern make, as displayed in this department, with countless strings of perforated cards, set in motion at every throw of the shuttle, each perforation representing one or more threads in the woof. Such looms are used mainly for the more intricate designs, and not alone for silk-weaving, but for the weaving of carpets, and other textile fabrics. By the largest among this group are woven bordered carpets twelve feet square, and at the smallest

MORGAN ELECTRIC TRAVELLING CRANE



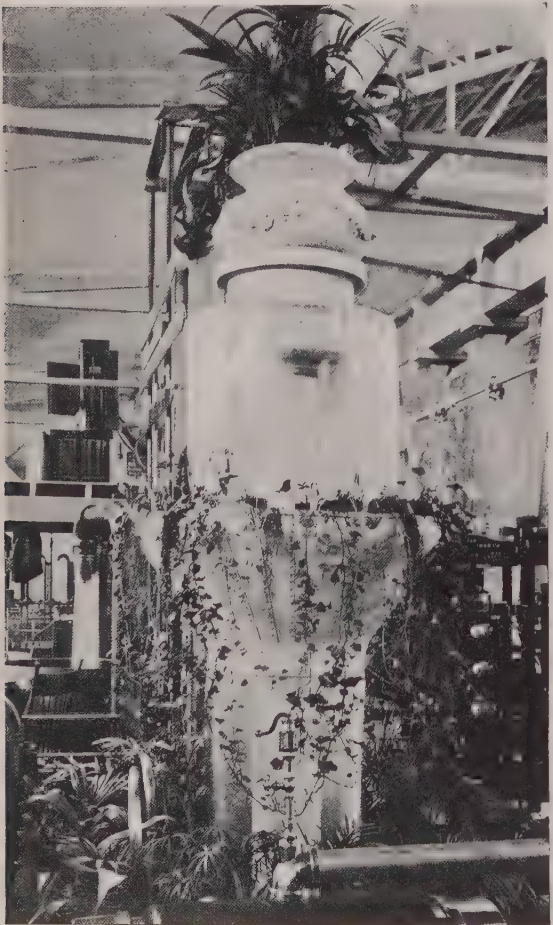
COTTON MACHINERY

WOOD CUTTING MACHINERY

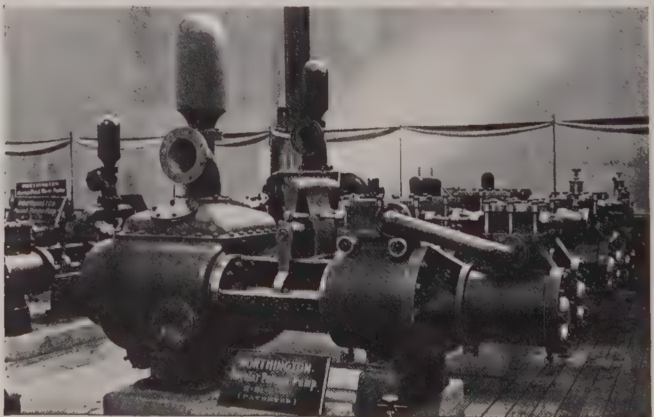
FOUNTAINS, PUMPING ENGINE EXHIBIT

of antique pattern, and fashioned entirely of wood, sits an aged man from a Philadelphia factory, moving the treadle by foot, and the shuttles by hand. With the exception of one for making Turkish towels, this is the only hand-loom in the collection. At the former a Turk, in orthodox native costume, bends over his task, and with true oriental deliberation swings forward his beam, and passes his shuttle through the warp. Next to him, by way of contrast, a modern Jacquard weaves a couple of towels at a time.

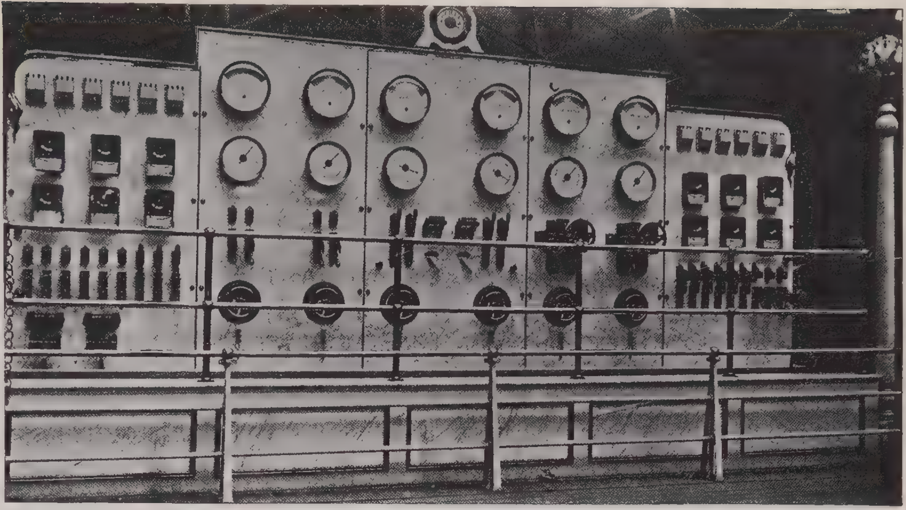
Of machinery for the production of silk goods there are several exhibits, some of them including looms for the manufacture of cottons, woolens, and mixed or miscellaneous textiles. Among the more interesting collections are those from Worcester, Massachusetts, one of its exhibiting firms stating that 10,000 of its looms are at work in foreign lands. A Philadelphia house has a large display of apparatus; Pittsburg and Paterson are also represented, and there is a single machine from the quaint old Connecticut seaport of Stonington, founded on Long Island sound in 1649, and where still are traces of its bombardment by a British squadron during the war of 1812.



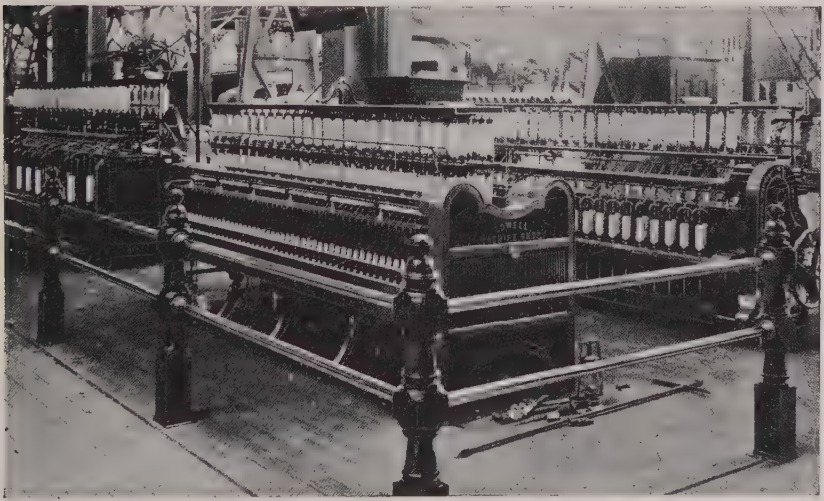
FORCE PUMP AND FOUNTAIN



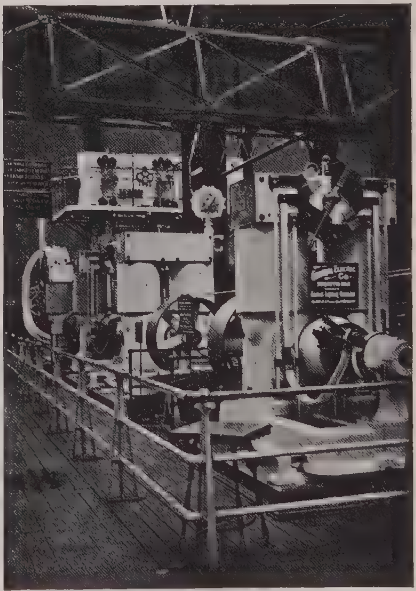
WORTHINGTON STEAM PUMPS

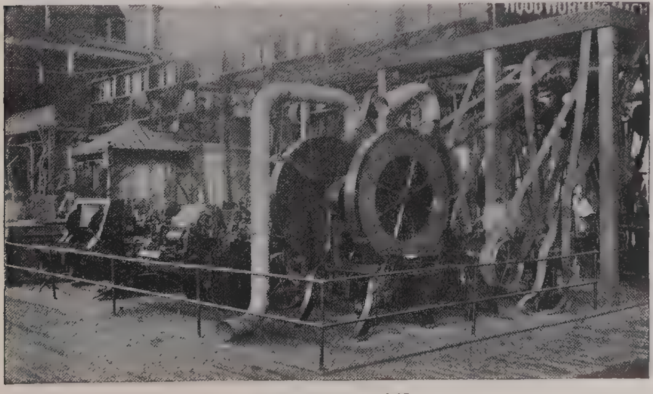

SWITCH-BOARD

To describe all the workings of these looms is no part of my purpose, even were such description practicable; nor would days and weeks of close observation and study unfold to the visitor their manifold intricacies. Swiftly and smoothly they run, while producing the most elaborate as well as the most simple patterns, stopping when they should, and indicating by noisy demonstration when something is amiss, so that the operator would almost seem to be controlled by his loom, and not the loom by its operator. From the upper portion of the machine a mass of film-like threads passes downward in unbroken line, mingling with the warp in complicated and mysterious fashion, while darting alternately, from left to right and from right to left, the shuttles perform their noisy task. As an instance of their rapidity of movement, it may be stated that, in the manufacture of towels of the finer grades, the shuttles pass to and fro more than 100 times over every square inch of their surface, and yet of such towels several hundreds a day can be made by half a dozen looms, with the aid of a single operator. "My days are swifter than a weaver's shuttle," exclaimed the afflicted patriarch; but Job had never seen in motion a modern Jacquard loom.

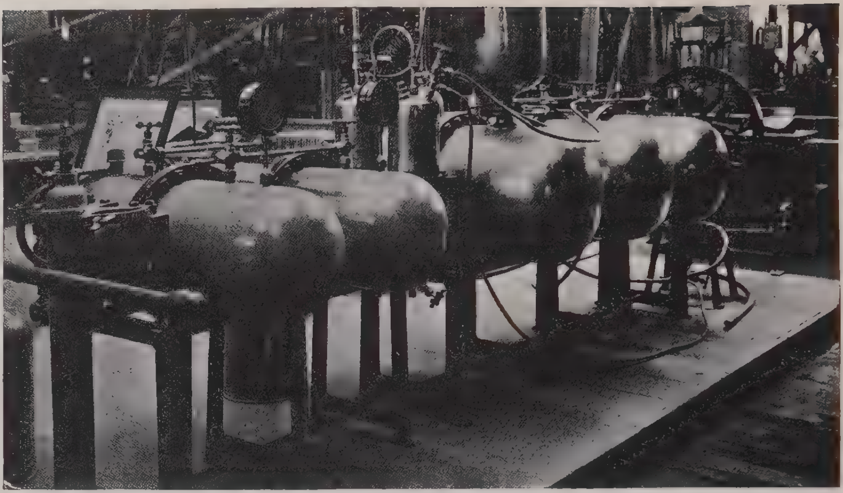

LOWELL COTTON MACHINERY

Silk ribbons are made at the rate of two dozen pieces at a time, and passing from the loom as finished fabrics are wound into rolls by apparatus placed beneath. These are of many patterns, colors, and qualities, the warp displaying all the hues of the rainbow as the threads pass swiftly across the frame. The silk machines are worked by women, all of whom appear to be expert operatives, passing rapidly to and fro, correcting faults and imperfections, stopping the loom when needed by simply moving a bar at its lower end, and setting again in motion its endless array of threads. In addition to dress silks and ribbons, some of the former in heavy brocades, and the latter with satin finish, souvenir badges, and figured and embroidered handkerchiefs are manufactured by the dozen, with other articles classed under the head of art-weaving.


EDISON DYNAMOS

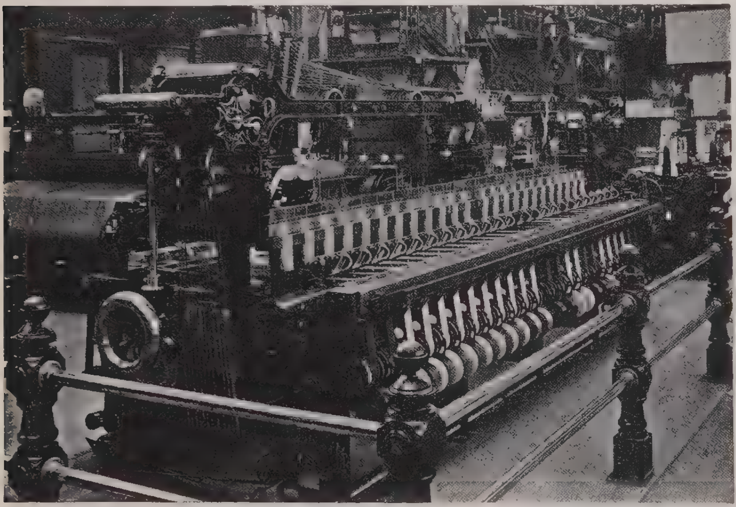

BARREL STAVE JOINTER

By the three Worcester firms mentioned as among makers of silk machinery, cotton and woolen



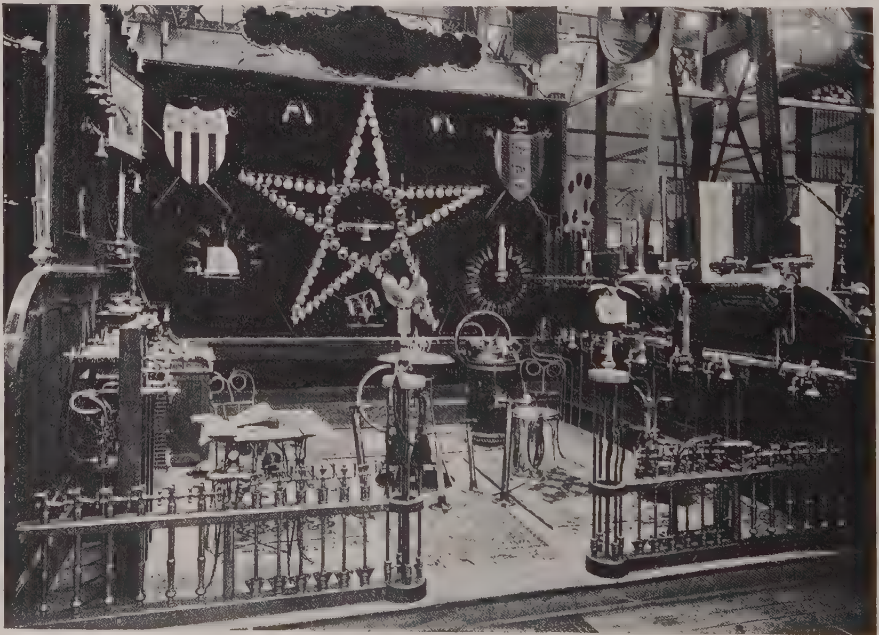
SODA WATER APPARATUS

looms are also largely produced. Of such as are used for fabrics made partially of cotton there are several collections; Pawtucket, Rhode Island, has a minor display, and the great manufacturing town of Lowell, the Manchester of America, with nearly 200 mills, with 25,000 looms at work, and more than 1,000,000 spindles, is represented at the great World's Fair by a single cotton machine. Yet in the foundries and machine shops of Lowell are produced nearly all classes of apparatus such as is used in her factories. In a miniature cotton mill are demonstrated all the various processes of converting the raw material into finished goods. Cotton, fresh from the bale, is placed in the feeder, where it is freed from refuse, and then smoothed and carded into suitable lengths. Then, after other preliminary treatment, it is woven into fabrics, the spindles moving so rapidly that to the unpracticed eye they appear not to move at all.



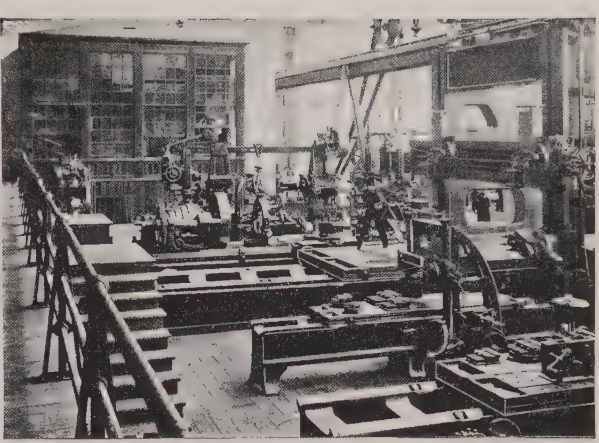
RIBBON WEAVING LOOMS

Another interesting process is that of making threads, which can be seen to excellent advantage in the exhibit of a Connecticut factory, its location, together with the character of its exhibits displayed by a sign, with the word "Willimantic" fashioned in spools of black thread on a background of white. Several times a minute the lettering is changed, the inscription alternating with that of spool-cotton, through some ingenious manipulation too swift for the eye to detect. By one of the machines, named a spool-winder, eight spools are wound at a time, each with 200 yards of thread; the thread is cut and fastened into a notch on the edge of the spool; the spools are labelled, and others take their place, all by automatic methods and without a moment's cessation. There are also ready wound bobbins for sewing and other machines, with balls of thread for various purposes; there are threads of all sizes and colors in the form of panels, and pillars, and on a revolving cylinder columns of spool cotton in every hue are being woven together, as by a braiding machine.



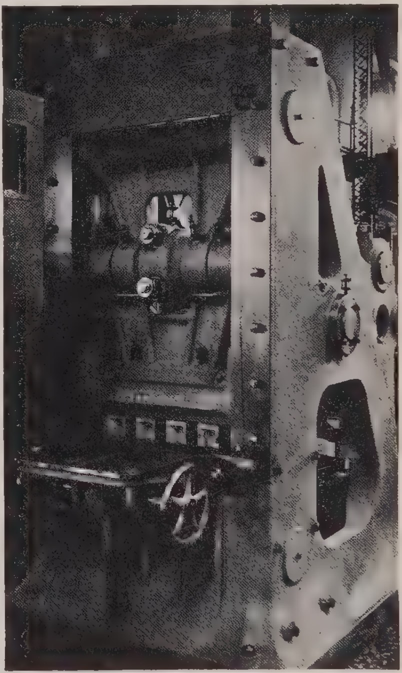
GAUGES AND COCKS

Of machines for knit underwear there are several in operation, producing yard after yard of fabric which, with but slight manipulation, is transformed into garments. In contrast with them are two hand machines, turned by cranks, and of primitive fashion. A Philadelphia firm has among its collection an apparatus for making underwear trimmings at the rate of fifty yards an hour. Another Philadelphia company has hosiery and mitten machines of various sizes. A Chicago company shows some swift-running specimens; but in this department the entire display is far from complete, some of the best machinery and such as is widely used for knit goods being omitted altogether from the group. Other textiles are also in process of manufacture, from jeans and homespuns to the finest of laces and embroideries.

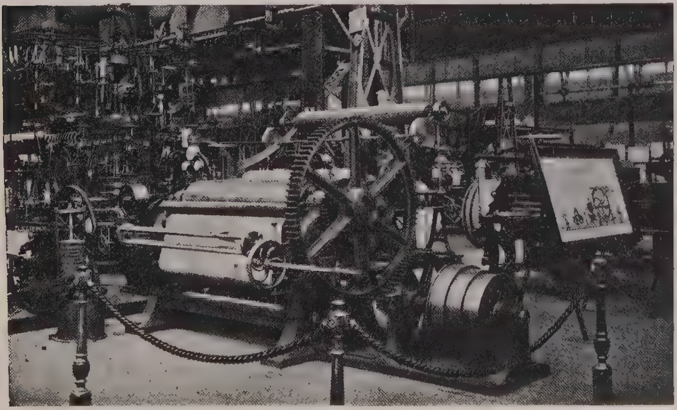

MODEL MACHINE SHOP

The exhibits of machinery for the production of clothing include such as is used for shoes and gloves; but no shoes are made in Machinery hall, the apparatus being adapted only to lining, cementing, heeling, and certain finishing processes, as the making of button-holes. Glove-making is shown in all the stages whereby a piece of tanned skin is converted into a pair of many buttoned kid, carefully stitched, perfumed, and packed, in readiness for use. There are also machines for belt-lacing, for working hides and leather, for harness, saddlery and whips, for rubber stamps, and felt goods. Of sewing machines for household and factory use, and for stitching leather and other heavy materials, there are several collections, but with little of special interest in this department.

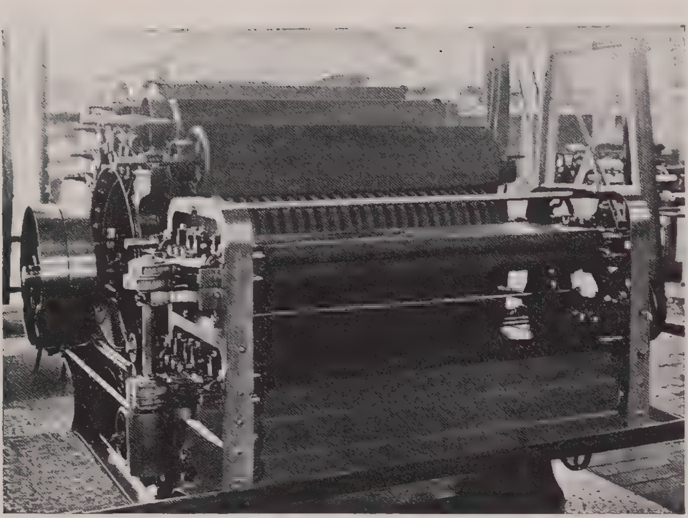
FIRE EXTINGUISHERS


BRICK PRESS, CANADA

Paper-making machinery is included, as I have said, among textile apparatus, and here may be observed the process whereby wood pulp is transformed into bulky rolls of paper ready for the printing-press. The pulp is made from spruce logs, cut into suitable lengths, ground, and mixed with sulphite, to soften the fibre and destroy all deleterious substances. When ready for the mill the material is placed in the beater, and thoroughly mixed with the sizing, coloring, and other matter which enters into the finished product. Then, in a semi-liquid condition, it is drawn off into a storage tank beneath, and presently submitted to a further mixing and grinding operation performed by a so-called perfecting machine. As yet, however, the paper is anything but finished, resembling somewhat curdled cream, but of whiter complexion, and only after much further manipulation, which need not here be described, is ready to receive on its surface the news of the world. In this machine, fashioned at the Beloit Iron works, with a capacity of ten tons of paper a day, and occupying more than 100 feet of longitudinal floor space, are contained nearly 200 tons of steel and iron.


FRENCH PRINTING PRESS

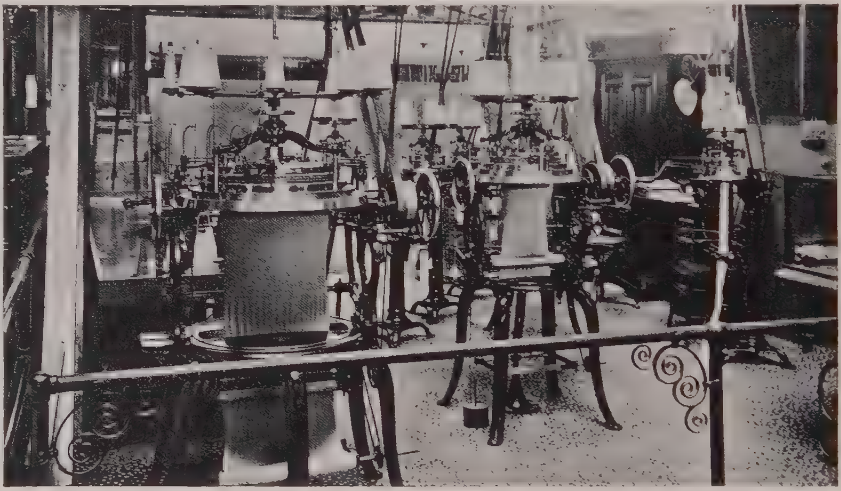
Nowhere better than in Machinery hall, and especially in the textile group, can the visitor study the industrial phases of factory life. Here may be seen at work operatives of the better class in the leading branches of manufacture, men and women working side by side in producing the countless articles for use or ornament which grow into shape before the eyes of the observer. While attending to their several tasks they are always ready to answer questions or to offer brief explanations, the latter, however, too thickly interlarded with technical phrase to throw much light on the subject;



WEAVING LOOM

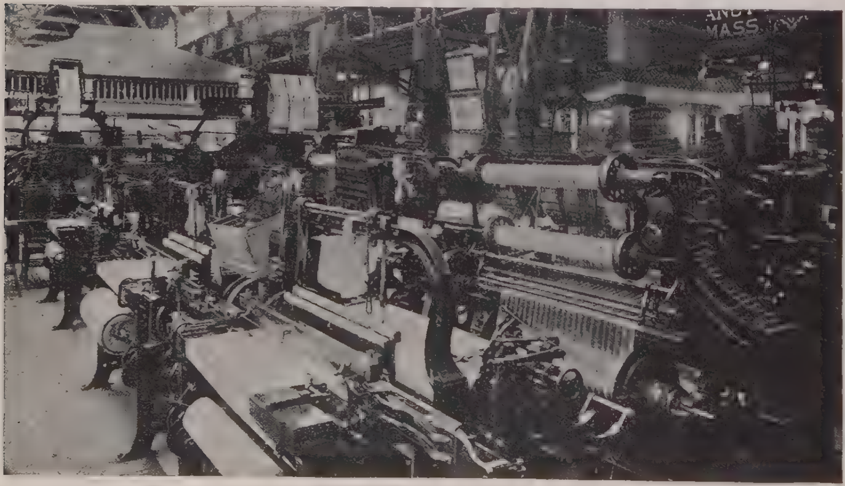
for what seems to them as simple as the alphabet is to the average spectator a labyrinth of mysteries. Nevertheless one may learn as much from these miniature mills and factories as by making a tour of the manufacturing centres of the United States.

Extending along the northern aisle and adjacent to the textile group is the Printing-press row of Machinery hall, where, covering more than 12,000 square feet of space, are presses, type-setting, type-casting, electro-typing, paper-cutting, book-binding, and other apparatus, the first including machines of various designs and dates, from such as did duty in the colonial era to those of modern make. Among the former, and included in the Hoe exhibit, is one of antique fashion, made by the same man, and of the same pattern as that which Benjamin Franklin used while working as a journeyman printer in London. In strange contrast with the swift-running presses of to-day, turning out their thirty-two page newspapers at the rate of 12,000 an hour, is this ungainly relic of a by-gone age, with its angular wooden frame, its rusty crank, and its long old-fashioned slide, the structure creaking and groaning under its task of printing on one side some 300 miniature sheets an hour, each twelve by sixteen inches. A still more ancient specimen is the original Bradford press, the first one used in New York, with a model of the pioneer printing-office established in that city by William Bradford, on the 15th of April, 1693. Here also is the first printing-press used in New Hampshire, made by one Thomas Draper of Boston in 1742, later used by the state printer, and after other changes of ownership passing into the hands of its exhibitor, the Campbell Printing Press Manufacturing company. Among other curiosities is an old Ramage press exhibited by a Chicago company, together with samples of its type-casting machines. Side by side with these primitive appliances are marvels of printing mechanism, into one side of which the paper passes fresh from the roll in long unbroken line, and from the other comes forth in the form of printed and folded journals, at the rate of many thousands an hour.



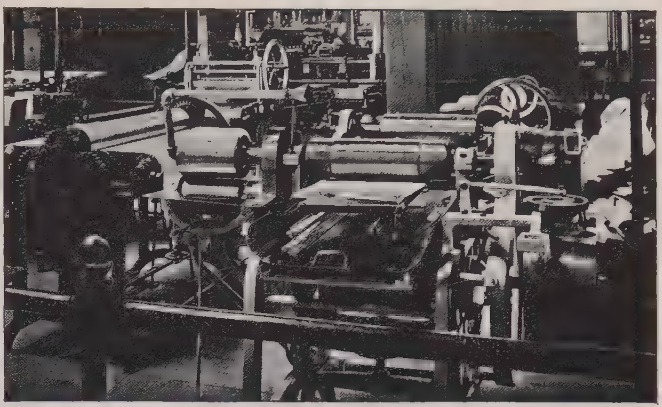
KNITTING MACHINES

Of printing-presses there is at least a score of exhibitors, some of them including stereotyping, electrotyping, paper-cutting, and other apparatus. Included in this group are samples of all descriptions, from perfecting presses to such as are used for job work. First may be mentioned those of Richard Hoe and company, whose eight and ten-cylinder presses, throwing off 20,000 impressions an hour, and introduced about the middle of the century in New York, Philadelphia, and London, were supposed to represent the final limit of workmanship and speed. Soon, however, in the leading newspaper offices, where time is counted by

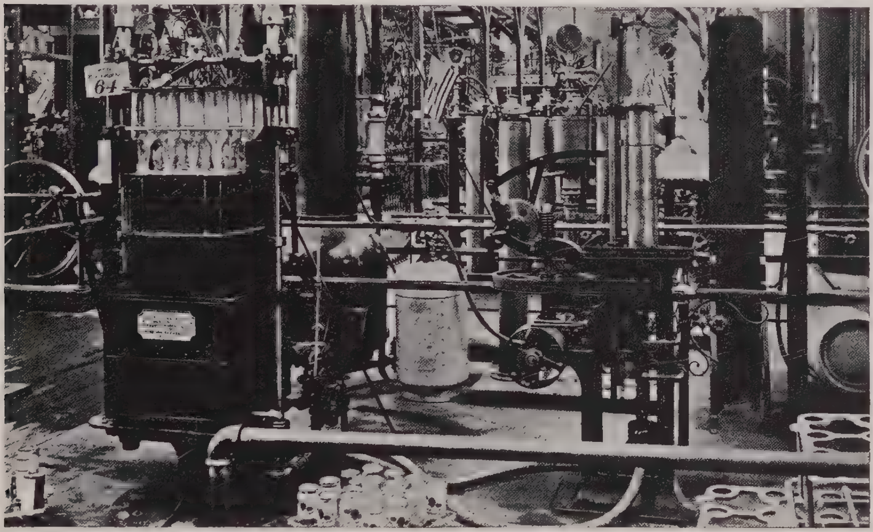


COTTON AND WOOLEN WEAVING LOOMS

seconds, web perfecting presses were reeling off their eight-page journals at the rate of 700 or 800 a minute. One of the highest forms of development is found in the Hoe quadruple web-perfecting press, now largely used by popular newspapers with their mammoth Sunday editions. By this machine a four-page newspaper can be printed and folded at the rate of 90,000 an hour; one of six or eight pages at half that speed, one of from ten to sixteen pages at 24,000, and one of twenty-four to thirty-two pages at 12,000 an hour. Some of these processes may be seen in actual operation in Printing-press row, not only on Hoe machines but on those of the Goss, Potter, and Scott patterns, all of which are here on exposition.


LAUNDRY AND MANGLE EXHIBIT

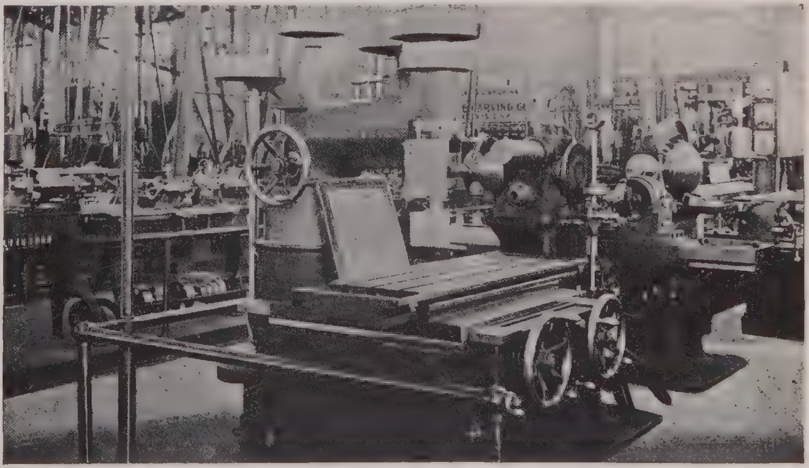
To the majority of Exposition sight-seers it may not be known that the newspapers laid on their breakfast or dinner tables were printed in Machinery hall; but here we may observe the entire process whereby from these perfecting presses are issued, more swiftly than the eye can count them, the sheets of several Chicago journals. In a separate building, south of the western annex, was installed through lack of space, and as a precaution against fire, the electrotyping machinery, forming probably the largest collection ever contained within a single edifice, with complete sets of the most recent and approved apparatus fashioned by leading manufacturers. These are also in actual operation, and thus may be seen how a newspaper is born into the world, from the making of its stereotype plates from papier-maché matrices, until the finished and folded sheets are ready for the newsboy, all eager to disturb with reiterated cry the morning sleep of the Fair pilgrim.



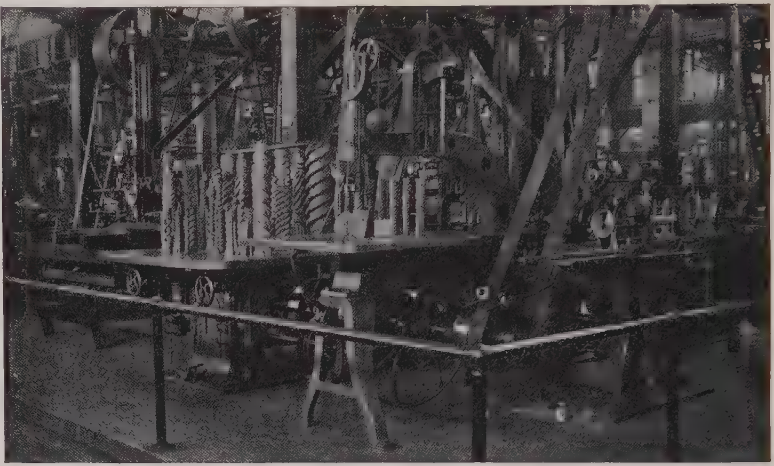
BOTTLE CLEANING APPARATUS

Chicago is well represented in this department by five exhibiting firms, one of them the Goss Printing-press company, three of whose perfecting presses are here at work. The Miehle Printing Press and Manufacturing company has also a press in operation, of Chicago invention and make, on which is printed the page now before the reader, that is to say *The Book of the Fair.* Another Chicago firm displays its printing and job presses, with electrotyping and paper-cutting machines. The remaining exhibits are from New York, New Jersey, New England, and mid-continental states. Near this section a New York company has an interesting collection illustrating the evolution of type-foundries. First is the primitive apparatus in the form of a hand-mold, made in 1793; then one with rotary motion, of the date of 1840; another worked by steam and fashioned in 1870, and finally the perfected mechanism of 1893. Of type-setting machines there are several exhibits, one firm displaying also a type-line casting machine, and of printers' materials and miscellaneous appliances there are one or two assortments.

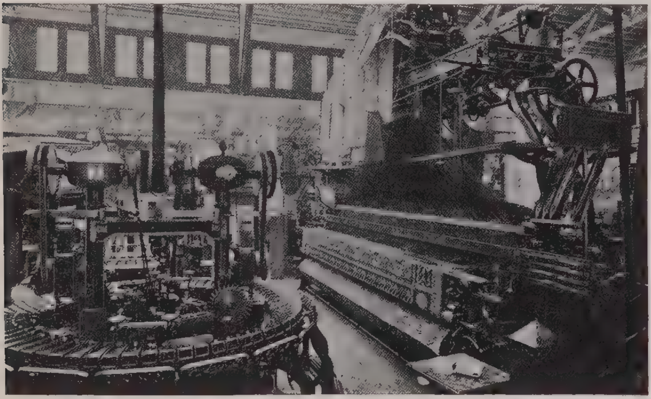
Of paper-cutting and paper-folding apparatus there are many specimens, and among the former may be seen at work some of the largest machines of their kind, run by heavy leather belting, and requiring only a turn of the wrist to cut through a ream of the thickest


CHUCKING MACHINERY

paper as though it were a roll of butter or a mass of lard. The latter are used both for book and periodical work, with hand or automatic feed, and with all the improvements devised since first the folding-machine was introduced in the United States, some forty years ago. By a firm whose headquarters are at Little Falls, New York are displayed its paper-working appliances, such as are attached to ruling and folding machines and printing-presses. Of book-binding and book-sewing machines there are several exhibits, the latter both for thread and wire stitching, and there are a few embossing and inking machines, some of them performing all grades of work with equal facility.

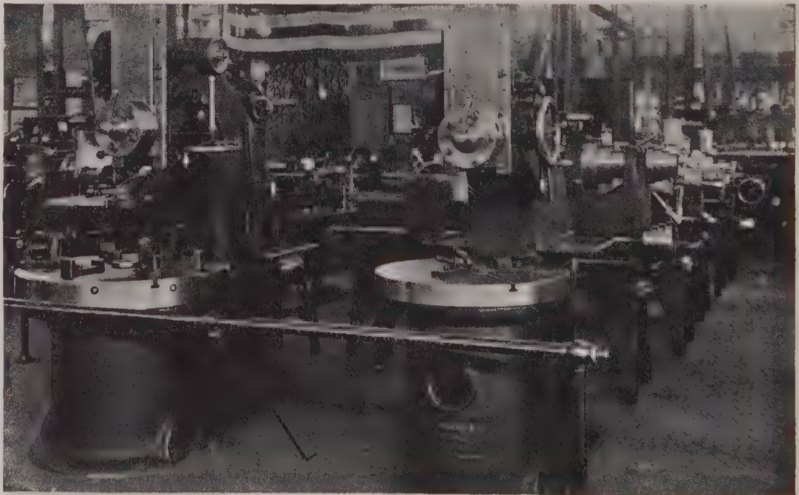

WOOD WORKING MACHINERY

Few in number, but of excellent quality, are the exhibits illustrating the various methods of lithography, color-printing, and other processes, partly chemical, and partly mechanical, which have been devised as substitutes for the productions of the brush, the pen, the pencil, or crayon. By a New York firm are displayed its lithographic distribution presses, and by Chicago exhibitors a multi-color process, and a duplex color ink-plate for printing-presses.

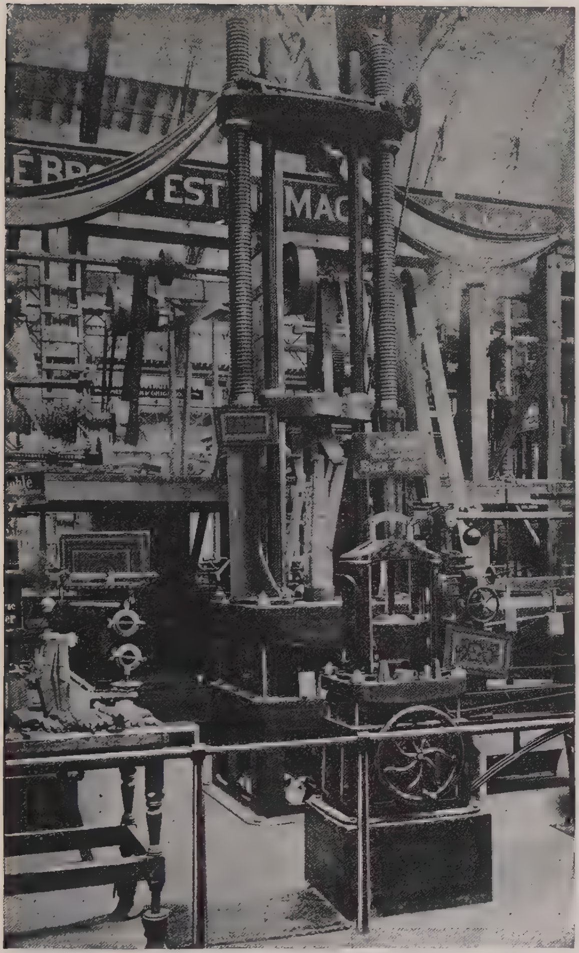

ART SQUARE LOOM

In the group of machinery for working in wood, separated from the textile section by the main longitudinal nave, is sufficient evidence of the rapid progress which recent years have witnessed in this department. But the limit has not yet been reached or even approached, and in few branches of mechanical invention are there greater possibilities. The turning-lathe, for instance, which a few years ago could only be used for shaping wood into rounded forms, will now give to it many varieties of outline, from square to spiral, and from oval to polygonal. So also with machines used for carving, stamping, molding, tonguing, and mortising lumber, and for all the various operations in which machinery does the work that was formerly done by hand. Yet in each of these processes there is still much room for improvement.

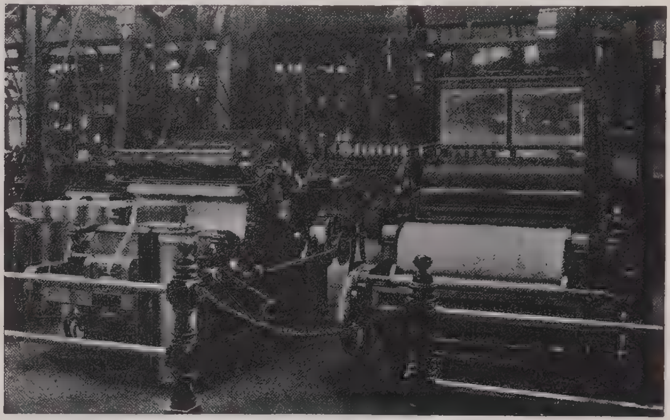
Among the more remarkable exhibits is one by a Pennsylvania manufacturer, in the form of a so-called geometrical machine. While not altogether new, there are few of this pattern in use in the United States; for here is a mechanism that can only be handled by the most skilful of mechanics, one producing perfect specimens of workmanship, and in all such figures in solid geometry as avail for practical use. A New York firm has special machines for the manufacture of the woodwork used in pianos and organs. Dubuque sends a swift-moving chain mortiser, in which chisels are entirely dispensed with, the chain revolving on pulleys of graduated sizes according to the width of the mortise. Among other mortisers of special pattern is one used by a Chicago firm whose specialty is in the line of car-building machinery. By its carriage attachment of iron, moving on rails, and by the iron rollers on the upper part of the machine is greatly facilitated the handling of heavy lumber. The same firm shows a double mortiser, mainly for door-work, an almost perfect specimen of labor-saving machinery.


VERTICAL SPINDLE MILLING MACHINE

A Cincinnati manufacturer displays a matcher of improved design, with stationary bed, and of which the

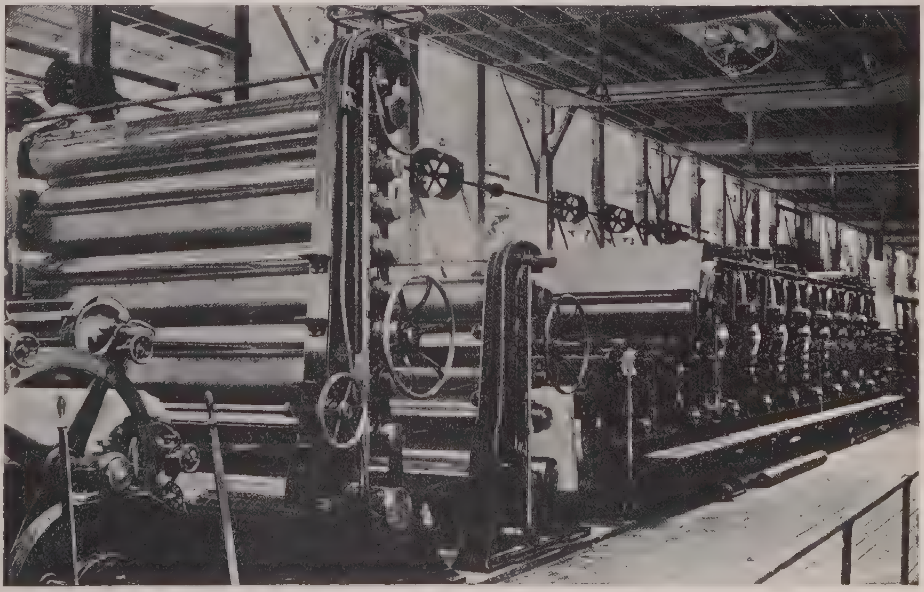


RIEHLE TESTING MACHINE

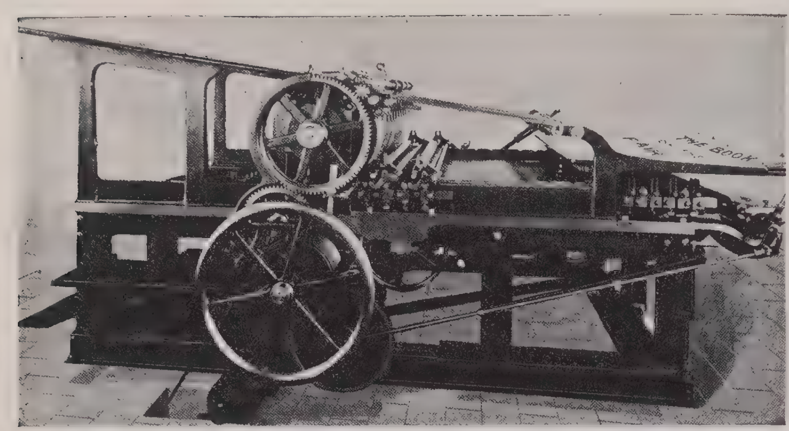


LOWELL COTTON MACHINERY

heads and rollers can be raised or lowered, and the pressure increased at will by an automatic process. From a Boston firm comes a matcher and molder of similar pattern, but with improvements permitting greater facility in working. Buffalo shows a planer which will work on the four sides of a piece of timber. Somewhat of a novelty is an ingraining machine from Hutton, Pennsylvania, whereby white-faced woods, as pine, spruce, maple, birch, and poplar are transformed into perfect imitations of quartered oak or other high-priced articles, and thus almost doubled in value. The designs are painted on a drum with thirty-inch face, revolving three times a minute, and capable of treating 6,000 feet of lumber an hour, to which it gives an additional value of about $20 a thousand, thus earning $1,200 for each working day. Saws and sawing-machines, files and filing machines are liberally represented, a Fitchburg, Massachusetts, company, established in 1832, claiming to be the largest manufacturers of saws and machine-knives in the United States, and that its goods are made by distinct and patented processes. In a separate building is a model saw-mill, mentioned under the heading of Miscellany. Of wood-working machinery there are many samples, and among wood-carving appliances are some whose motions resemble those of the human arm. There are also wood-embossing, shingling, barrel-making, box-nailing, pattern-making, and other special apparatus, while a Cincinnati firm has specimens of machinery used in the navy yards of the United States. Although classified together, the machines for working stone, clay, glass, and other materials, and for making spikes and nails are grouped in widely separated portions of the hall. Several firms display their processes of grinding and finishing lenses, and here may be observed the method of manufacturing wire nails. Another miscellaneous class is grouped near the water-tank, in the western sections of the annex. It includes all kinds of dynamometers for testing the strength of materials; the machinery used by jewellers, and opticians, and the laundry and dish washing apparatus. The laundry machines are of ingenious mechanism, and the more simple automatic dish-washers may be seen at work in the annex, and in several of the Exposition restaurants. Several eastern manufacturers have a large collection of watchmakers' tools; in one of these booths are made souvenir thimbles of gold and silver, and



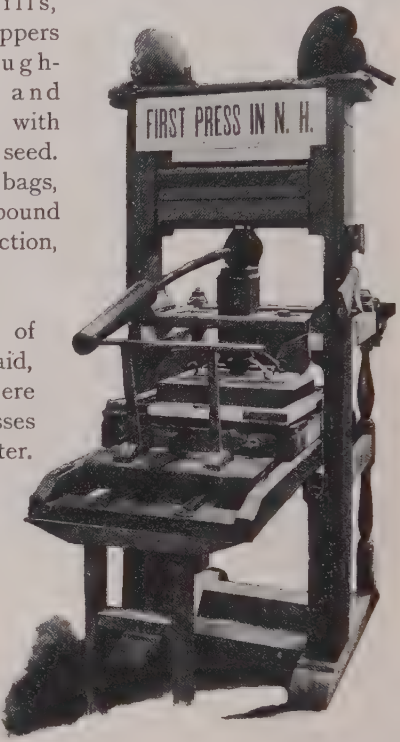
PAPER MAKING MACHINE



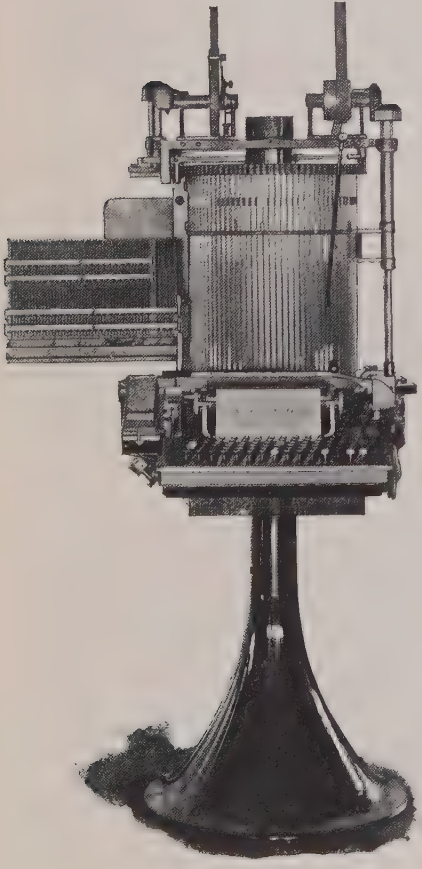
THE MIEHLE PRINTING PRESS

in the main hall a Chicago company displays its method of manufacturing pens. To the miscellaneous classes also belong the exhibit of road-making and street-cleaning machines, placed outside the building.

In the northwest corner of the annex is a collection of apparatus for the preparation of various articles of food. In one large pavilion a Milwaukee manufacturer has an extensive display of flour-mill machinery, and by an eastern firm are exhibited portable flour-mills. Then there are chocolate and sugar mills, meat-choppers and dough-mixers, and mills of all kinds for the preparation of cereals, coffee, and spices, together with bone crushers and models which show how the oil is extracted from cotton seed. Among the most ingenious mechanisms is one for pouring the beans into bags, arranged on a movable plate, and remaining just long enough to receive one pound of coffee, after which they are sealed, labelled, and passed forward for inspection, by means of a travelling belt.



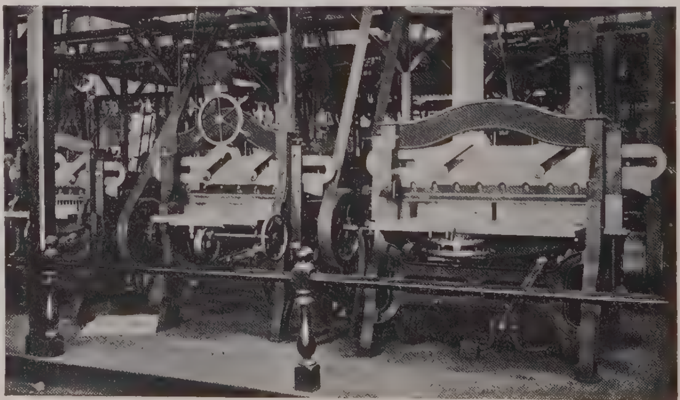
Except for a few specimens contained in Machinery hall, the exhibits of refrigerating apparatus and of ice-making machines were installed, as I have said, in the Cold Storage building, in the south-western portion of the grounds. Here were displayed the various methods of artificial freezing, and the several processes for the preservation of such perishable articles as fruit, meat, eggs, and butter. In the manufacture of ice, filtered water, and condensed and purified steam were the principal materials used. Of this building, and its destruction by fire a description is given at the close of this chapter under the heading of World's Fair Miscellany.



TYPE-SETTING MACHINE

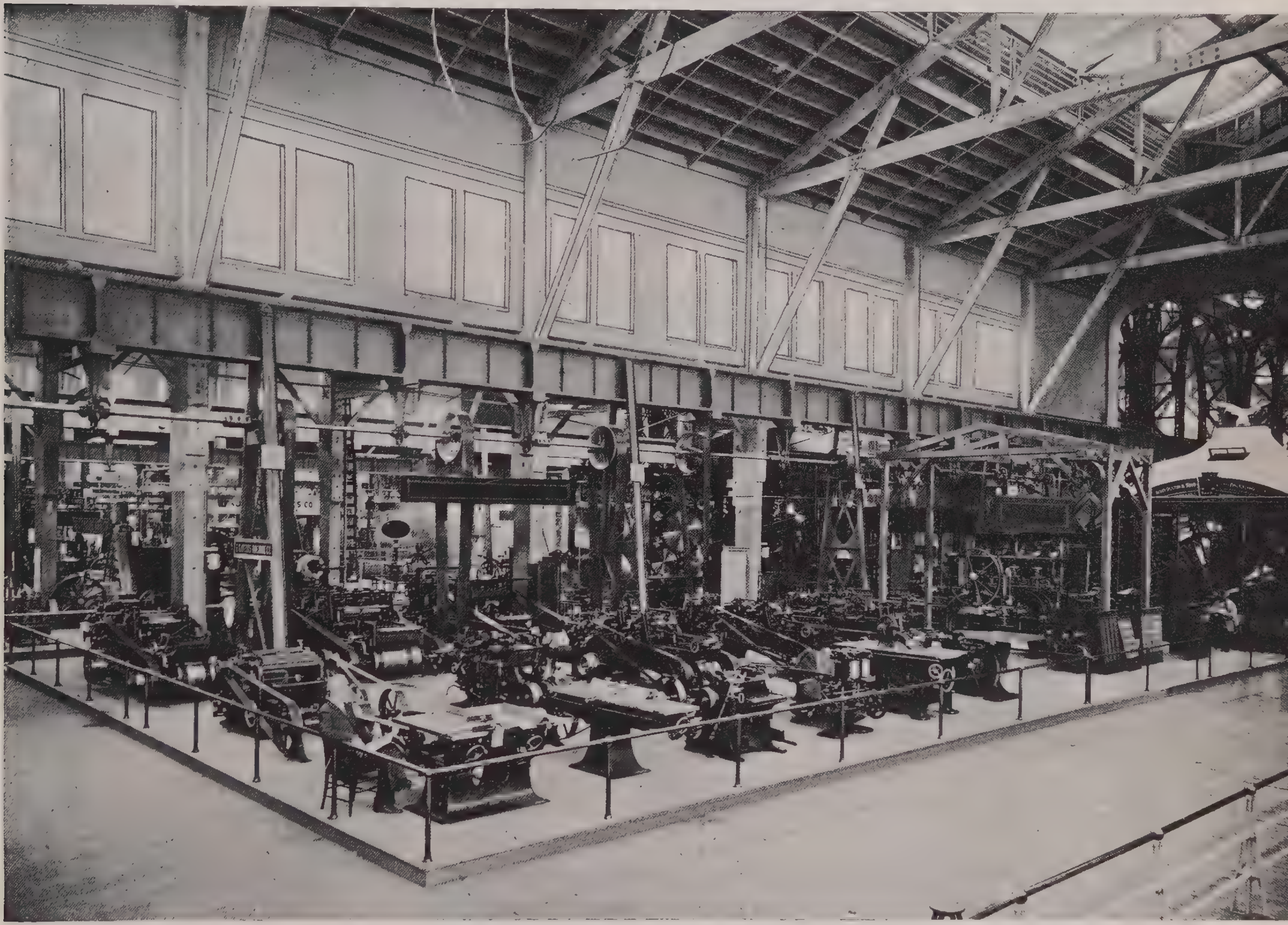
Turning to the foreign sections in Machinery hall we find that, as in other departments, the German groups have been selected and arranged with special care, furnishing sufficient proof, if proof were needed, that the empire is holding its own in the markets of the world. For general purposes this branch of industry, as represented in the Fatherland, may be classed in three divisions; first, the casting of iron; second, the construction of machinery; and third, the conversion of manufactured iron into structural forms. Year by year these industries are assuming larger proportions, and while gaining in volume are gaining far more in quality. Of castings alone there were produced in 1890 more than 1,000,000 tons, keeping busy 1,150 establishments, and affording employment to 64,000 operatives. In the production of machines and apparatus of all descriptions at least 200,000 persons were employed, with exports for that year exceeding 80,000 tons, and valued at nearly $20,000,000.

Passing through the northern portal of the hall the visitor enters at once the German section, occupying



SELF CLAMPING PAPER CUTTING MACHINE

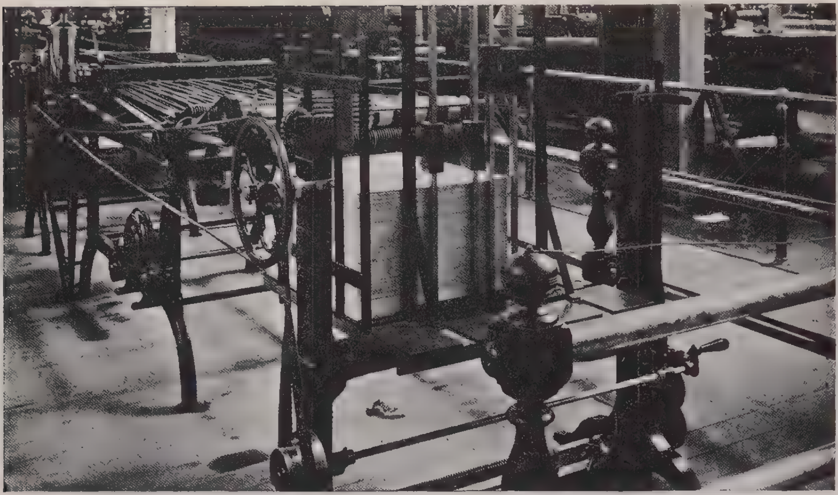
50,000 square feet of space, and flanked by the British division. But here are contained only portions of the German exhibits, agricultural implements, mining apparatus, locomotives, dynamos, and other machinery being housed in the various departments to which they belong. At the intersection of the main aisles is a triple expansion engine, connected with a dynamo, for illumination purposes, and for the transmission of electric power. This engine, built by an Elbing manufacturer in western Prussia, is of 1,000 horse-power, its frame entirely of wrought iron, its stroke of 28 inches, and its revolutions at the rate of 100 to the minute. At its side, is a smaller engine, forming its counterpart in miniature, and used for driving a portion of the shafting in Machinery hall. Adjacent to this group are the gas and petroleum engines, the largest not exceeding thirty-five, and the smallest of three horse-power. As in England, these machines are rapidly gaining in favor, and of especial excellence are those of German make. By one of the exhibiting firms, employing 1,000 workmen, and with a branch factory in Philadelphia, have been produced some 40,000 engines, since their works were opened in 1864, as the pioneer enterprise in this department, now protected by patents in many countries.



WOOD WORKING MACHINERY

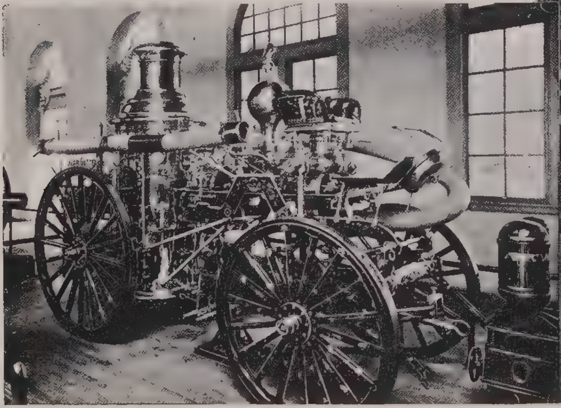
East of these exhibits is that of a Leipsic firm, whose specialty is the manufacture of sawing-machines and machines for working in wood, of which their 600 workmen have already produced some 24,000 specimens. Here is reproduced what is claimed to be the largest saw-mill in existence, but one that appears somewhat crude as compared with American models, and with few of the time and labor-saving devices contained in the latter. In charge of expert workmen is a large collection of apparatus in actual operation. Still further east a Düsseldorf factory, with a branch establishment at Pittsburg, has a display of machine-tools and saws of all sizes and patterns, from hand, jig, and circular saws, to such as will cut the thickest armor plate. One fashioned for the latter purpose is more than four feet in diameter, with teeth half an inch thick, and of the hardest steel. In the north-east corner of this section another Düsseldorf firm shows its machines for making armor and hand-chains, with wire-nail, riveting, and other presses. At the western extremity a Nuremberg manufacturer exhibits fine wires of brass, steel, and German silver, some of them in skeins as delicate as silk, with wire brushes for household and other purposes.

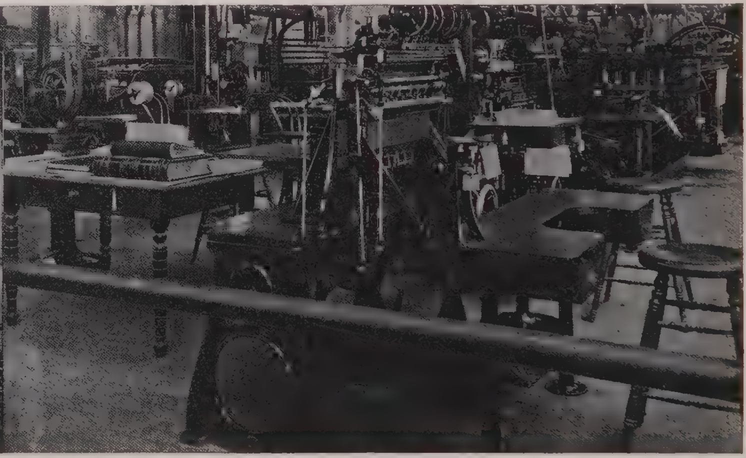
As displayed at the Fair the German machines for working in wood and metals are strongly and carefully fashioned, and well provided with safeguards; but somewhat cumbersome, lacking in finish, and in other respects inferior to those of American make. Nevertheless there are among these groups appliances well worthy of


BOOKBINDERS' DOUBLE DISK RULING MACHINE

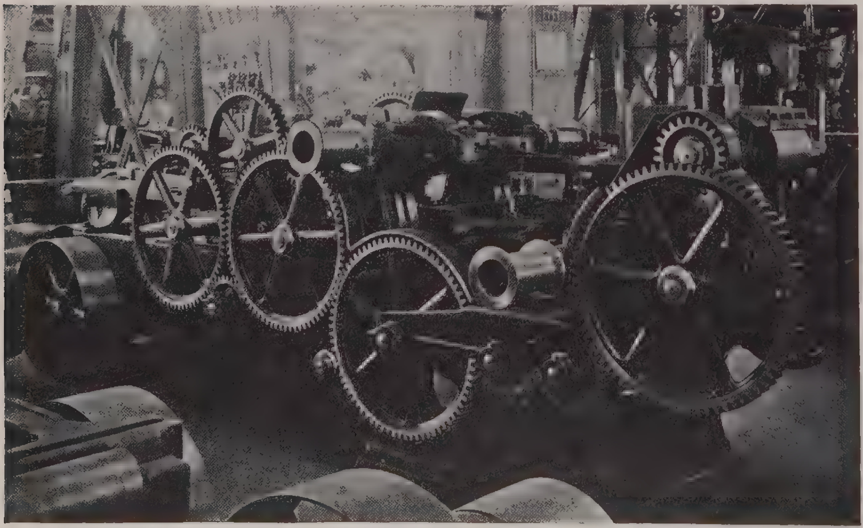
consideration. Such, for instance, is the one used for planing and molding, in which the lumber, after being placed in the machine, is stripped of its outside covering by knives with a rotary motion, and the finish imparted by stationary knives over which the lumber passes. It is then carried by rollers to other apparatus by which it is planed to the required thickness, and tongued and grooved for flooring, ceiling, wainscoting, and various uses. Another machine of similar pattern can produce 50,000 feet of flooring a day, and a third, in the form of a hand-feed planer and jointner, is one that might be used to advantage by our own mechanics.

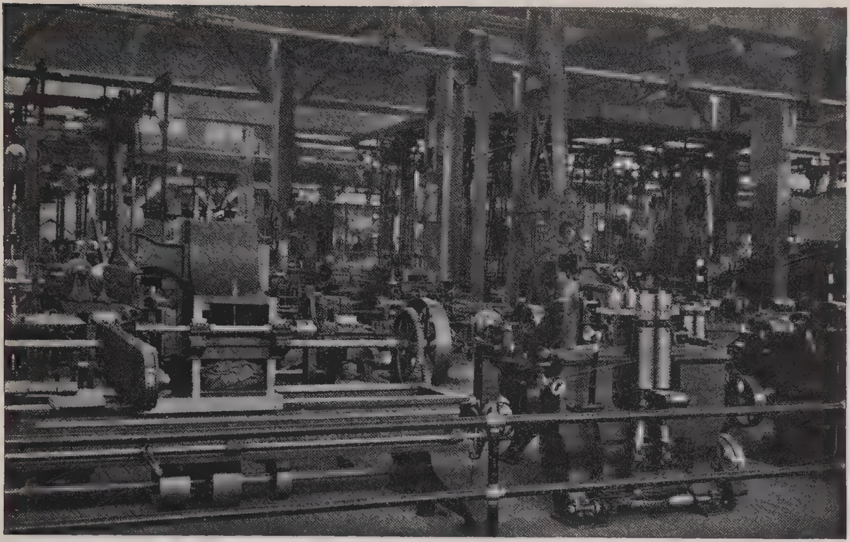
A minor but interesting exhibit, adjoining that of the Düsseldorf firm, is a match factory, where may be observed the process of making matches, together with the boxes that contain them. A single machine, and that one worked by a single operative, can cut 12,000,000 matches a day from blocks of wood prepared for the purpose. By an ingenious contrivance more than 2,000 matches at a time can be dipped in the igniting substance, a counterfeit being used for the purpose of illustration, as inflammable materials are forbidden by the authorities. For preparing the boxes, there are two machines, one shaving the wood into very thin sheets, and another cutting, folding, and labelling at the rate of 30,000 or 40,000 a day.


STEAM FIRE ENGINE


BOOKBINDERS' STITCHING MACHINE

German foundries and machine-shops are fairly represented in this section by exhibiting firms and companies in addition to those already mentioned; but here it may be stated that the term machine-shop or machine-builder is not used in Germany in the American sense of the phrase, some of these establishments producing a large variety of articles. From a Magdeburg firm are specimens of its portable steam-engines, with extension tubular boilers, of which about 750 were manufactured in 1890-1, with a total of 15,500 horse-power. A Remscheid factory in Rhenish Prussia has samples of its seamless steel tubes, fashioned by a patented process in all descriptions of steel, with a large collection of miscellaneous articles, from boiler tubes to telegraph poles. A Gotha

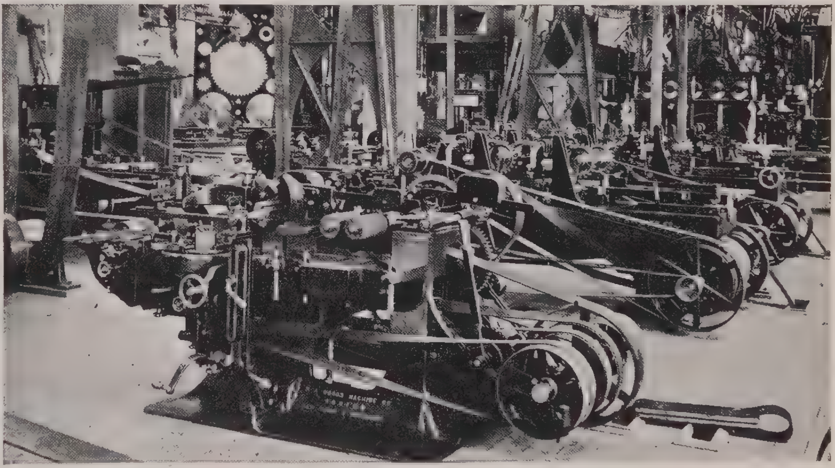

WOOD PLANING MACHINE



WOOD WORKING MACHINERY

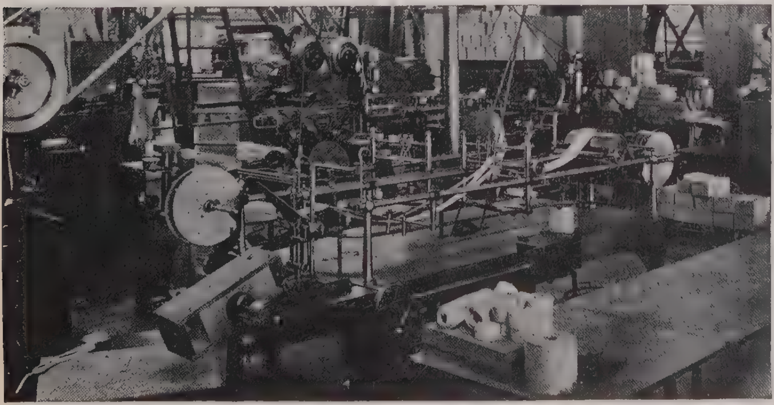
foundry displays its turbines, with a capacity of 50 horse-power, and a velocity of 170 revolutions to the minute. Another Magdeburg company has a collection of crushing and grinding machinery, with models of gas engines, and the products of chilled and malleable iron. By a Hamburg firm are shown its smoke-consuming furnaces, of which several were ordered for the new Reichstag buildings in Berlin, another exhibitor making a specialty of water-tube boilers and apparatus for superheating steam.

Of power-transmitting appliances there are several exhibits, a Hamburg manufacturer supplying the belting which runs the machines of a dozen or more exhibitors. By another firm is shown the Rouleaux method of endless driving ropes for the simultaneous transmission of power in several directions. Of fire-extinguishing apparatus there is but a single illustration, furnished by the oldest of German factories in this department. In the line of textile and other fabrics, including knit goods and embroidery, there are many samples of machinery and work. A Düsseldorf firm has a collection of apparatus for decorative purposes, and a Berlin house, cutting machines for the materials used in making garments of all descriptions. An exhibitor from the little Saxony town of Aue shows how he makes 6,000,000 sheet-metal bobbins a year, such as are serviceable in many branches of textile industries. From the same town comes a large assortment of carding, napping, pressing, and other apparatus, with spinning machines for woof and web. Knitting machines are well represented, and though working less swiftly than those of American make, produce more durable goods. In this connection may also be mentioned the display of an asbestos factory at Frankfort-on-the-Main, by which are worked up more than 1,000 tons of raw material, largely procured from its mines at Black lake in the province of Quebec.

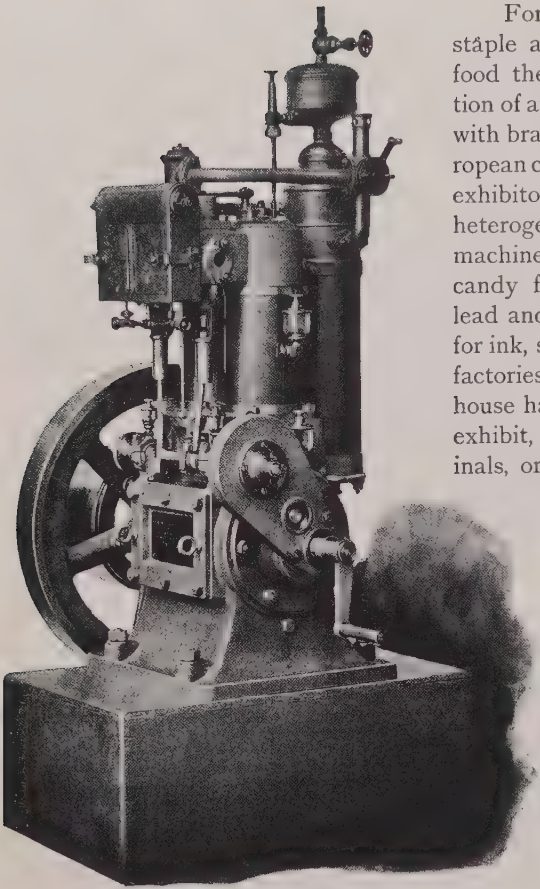


WOOD MOULDING MACHINES

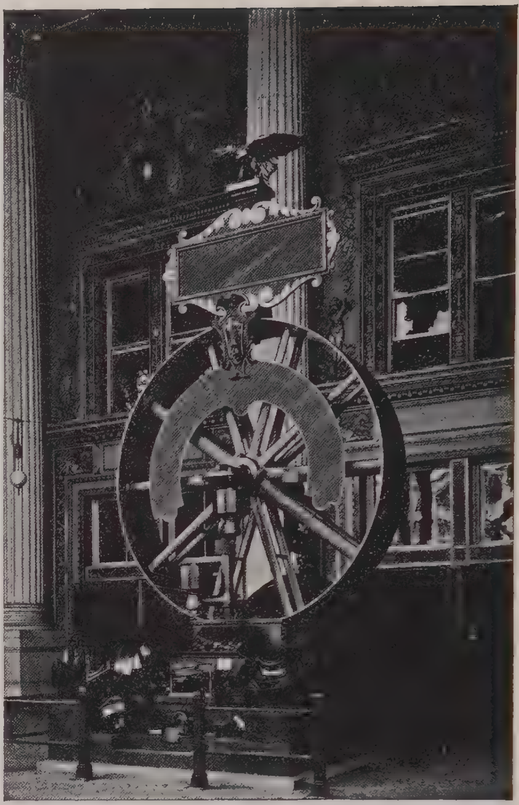
Of paper-making, paper-ruling, and book-binding machinery there are a few exhibits, and these for the most of old-fashioned apparatus, of which, however, many are furnished with modern improvements. In the entire hall there are but two paper-ruling machines of recent pattern, one a German, and the other an American invention, both using brass disks, fitted with metal rods, whereby the lines can be spaced to the thirtieth part of an inch. For the German machine, which is a model of simplicity and neatness, it is claimed that 4,000 sheets an hour can be ruled on both sides under the direction of a single operative. With a display of book-binding machinery a Dresden firm combines riveting and edging apparatus, and such as is used for the making of pasteboard boxes. By an Augsburg exhibitor is displayed a rotating machine for printing illustrations, and by a Heidelberg establishment a so-called lightning press, with automatic lifter and envelope feeder, by which can be printed 40,000 envelopes a day.



BOX-MAKING MACHINERY



CYLINDER PETROLEUM ENGINE, GERMANY



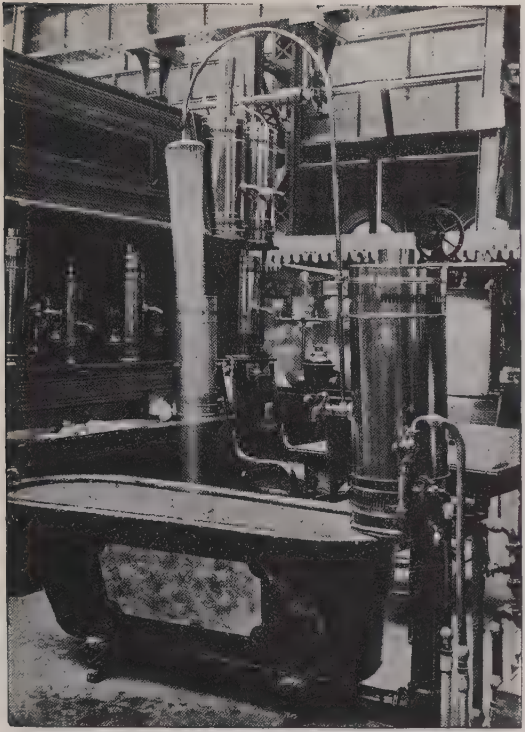
IN THE GERMAN SECTION

For the production of staple and other articles of food there is a large collection of apparatus from a firm with branches in several European capitals. A Dresden exhibitor has a somewhat heterogeneous assortment of machines for chocolate and candy factories, for white-lead and paint factories, and for ink, soap, and perfumery factories. A Brunswick house has an equally varied exhibit, with models, originals, or illustrations of turbines and roll-tables, hydraulic machines, grain, oil, and other mills, and appliances for husking grain, and for giving color to rice. Still another Dresden establishment has samples of the 2,000 machines produced each year for automatic milling plants for flour-mills and warehouses. From Berlin works come specimens of their porcelains and earthenware, their gas-retorts, their gas and steam-boiler furnaces, and their insulating materials for various purposes. A Hanover firm displays a number of patented pulley-blocks, and a Berlin house, with a branch in New York, its so-called smoke-hoods, used in the German and English navies, and its protective apparatus for firemen and others exposed to smoke and noxious vapors. Finally, there is a large collection of miscellaneous exhibits, including machinery and apparatus for cord and rope factories, for distilleries, for making shoes, for crushing rocks, for washing ores, for the manufacture of cement, and so forth till we come to meat and sausage machines, all forms of mechanism known to the Fatherland being here on exposition.

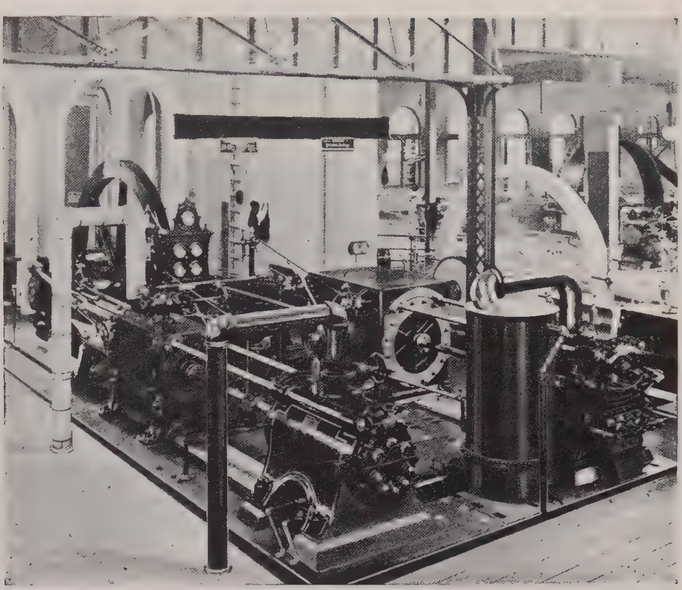
Great Britain is represented by a small but choice collection in the space assigned to her in the north-east corner of Machinery hall. Of late the tendency among British manufacturers has been

TRACTION ENGINE, CANADA

LARGE PROPELLER FOR STEAMER "SPREE"

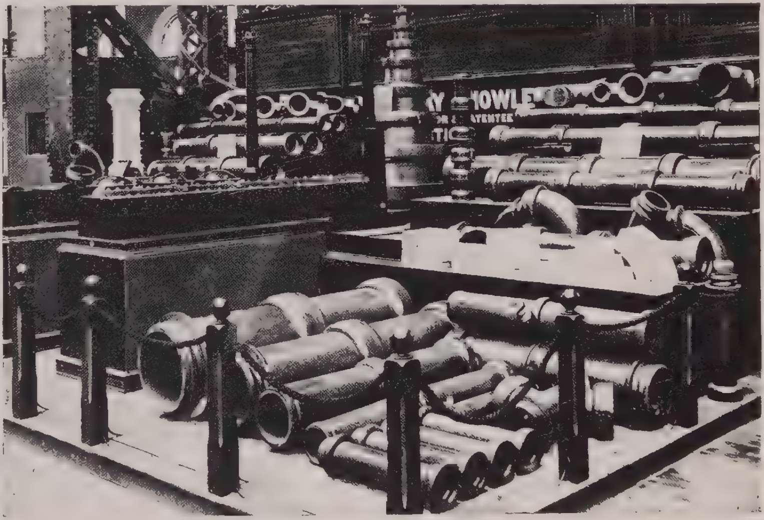


ENGLISH BATH TUB

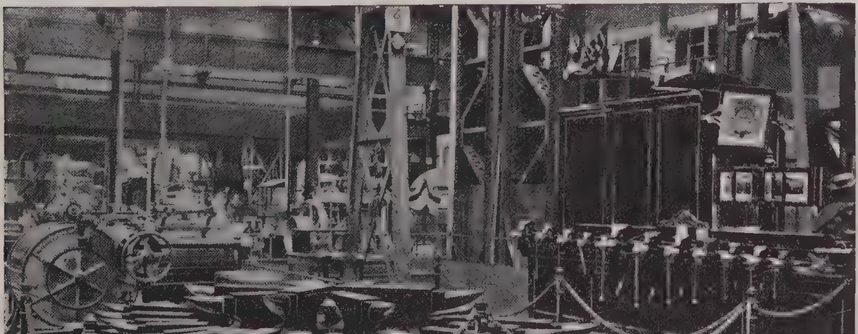


AIR COMPRESSOR

toward the construction of machines for particular lines of work, such as perform that work to the best advantage, and with the greatest economy of fuel and power. Steam engines, for instance, of all descriptions are not only modelled and proportioned for special uses, but are supplied with apparatus for super-heating the steam before it enters the cylinders, and also for its thorough condensation, the same steam often being used in several cylinders. So with gas engines, which in some departments are rapidly superseding steam-engines. In the production of war material this specialization is about the only improvement made within recent years, machines being so constructed as to perform only a single operation, but to perform it to perfection. Such also is and long has been the drift in other branches of mechanism, and thus alone can England continue to compete with the United States, where within a year or two the production of a given article is often doubled or trebled by new labor-saving appliances.[1]



ENGLISH TERRA COTTA DRAIN PIPES



ENGLISH ANVILS

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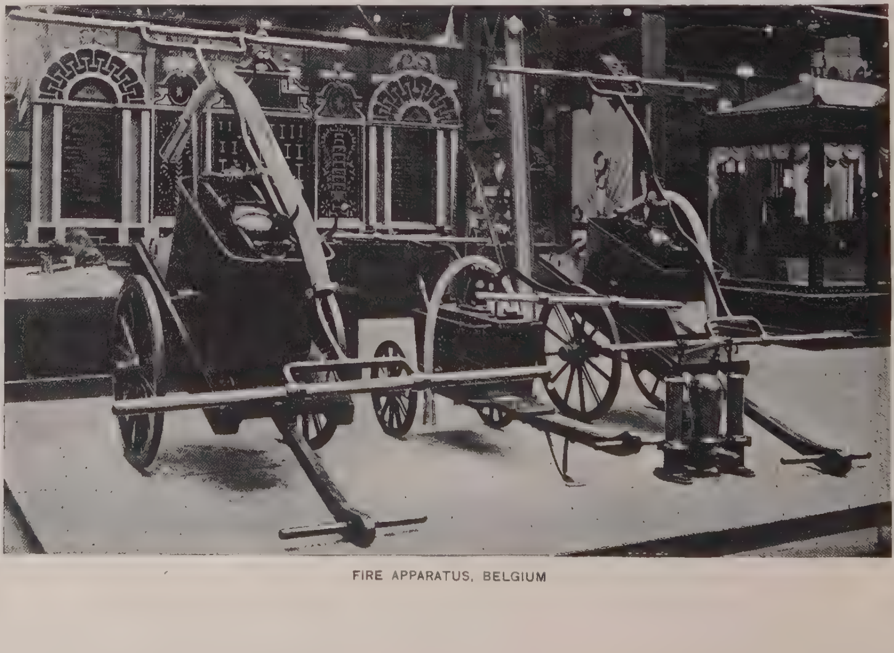
[1] As an instance of the decadence of British manufactures, due largely to American competition, it may be stated that the production of raw and manufactured iron has diminished considerably within recent years, while that of Bessemer steel has barely held its own. Of iron ores the imports fell from more than 4,000,000 tons in 1889 to less than 3,200,000 tons in 1891. Of blast furnaces there were on an average 445 in operation during the former year, against 373 in the latter, and from 4,651 puddling furnaces in 1883, the number decreased to 3,015 in 1890. The entire exports of British merchandise shows a small loss for the ten years ending with 1892, and a more serious loss since 1890. In the export of textile fabrics, however, there was a decided gain, textile manufactures affording employment or support to no less than 5,000,000 people, and with an invested capital of $100,000,000.

CANADA MACHINERY

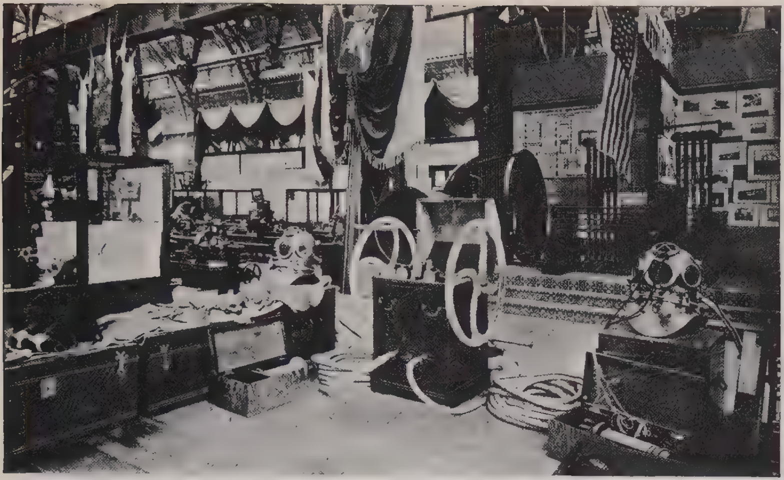
First and largest among the eleven groups contained in this section is that which includes motors, and apparatus for the generation and transmission of power. Here is a horizontal compound engine of Manchester make, by which is driven one of the three lines of shafting in the British section. With 70 revolutions to the minute, a boiler pressure of 100 pounds indicates 350 horse-power. Its high-pressure cylinder is supplied with a so-called gridiron expansion valve, operated by a process recently patented, the low-pressure cylinder being placed above it, and with the axis of the former radial to the shaft centre. The governor is in the shape of a parabola, with cylindrical fly-balls, and is connected with, and controls, the rod of the expansion valve, thus admitting steam as required. The workmanship is of thorough English type, solid, substantial, and with the parts so perfectly balanced that the engine runs smoothly and quickly, is readily controlled, and with remarkable steadiness of turning.

The other lines of shafting are driven by two single-acting central-valve engines, running smoothly and silently, but with remarkable speed, the normal rate

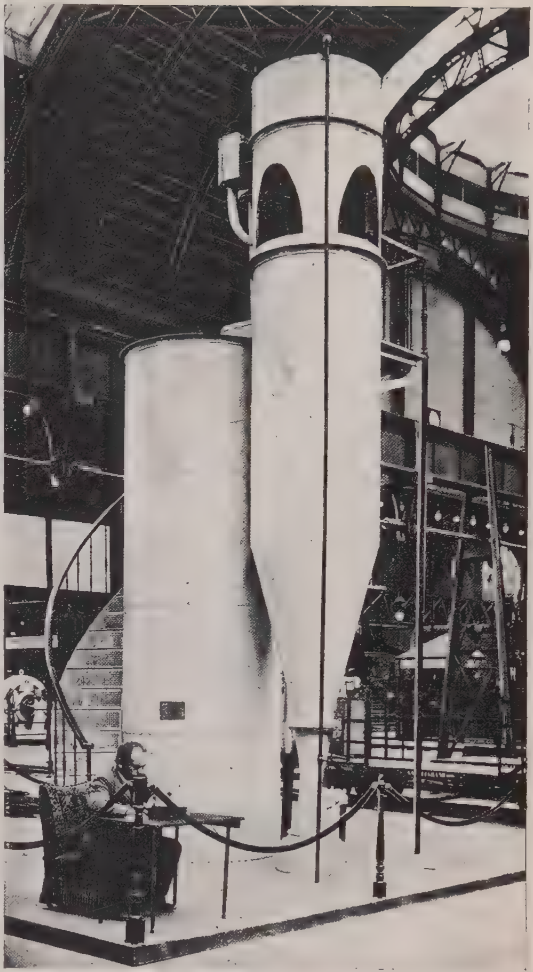
ENTRANCE TO MACHINERY HALL



FIRE APPARATUS, BELGIUM



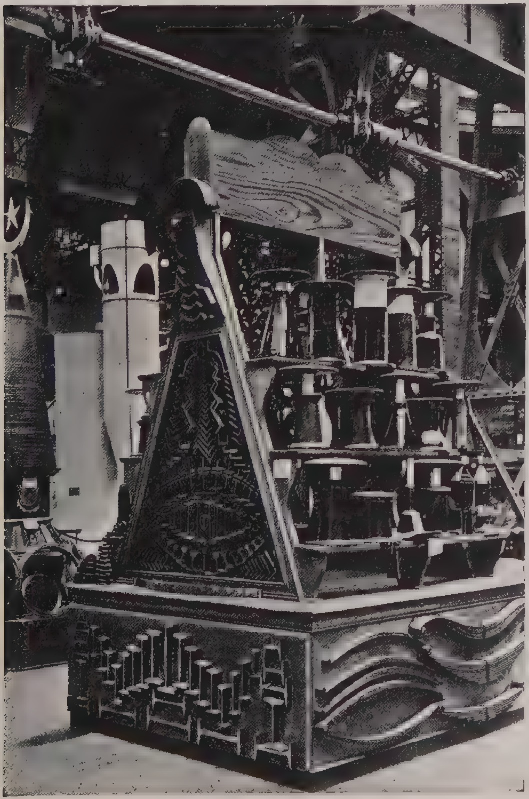
DIVING APPARATUS, RUSSIAN SECTION



WATER PURIFIER, BELGIUM

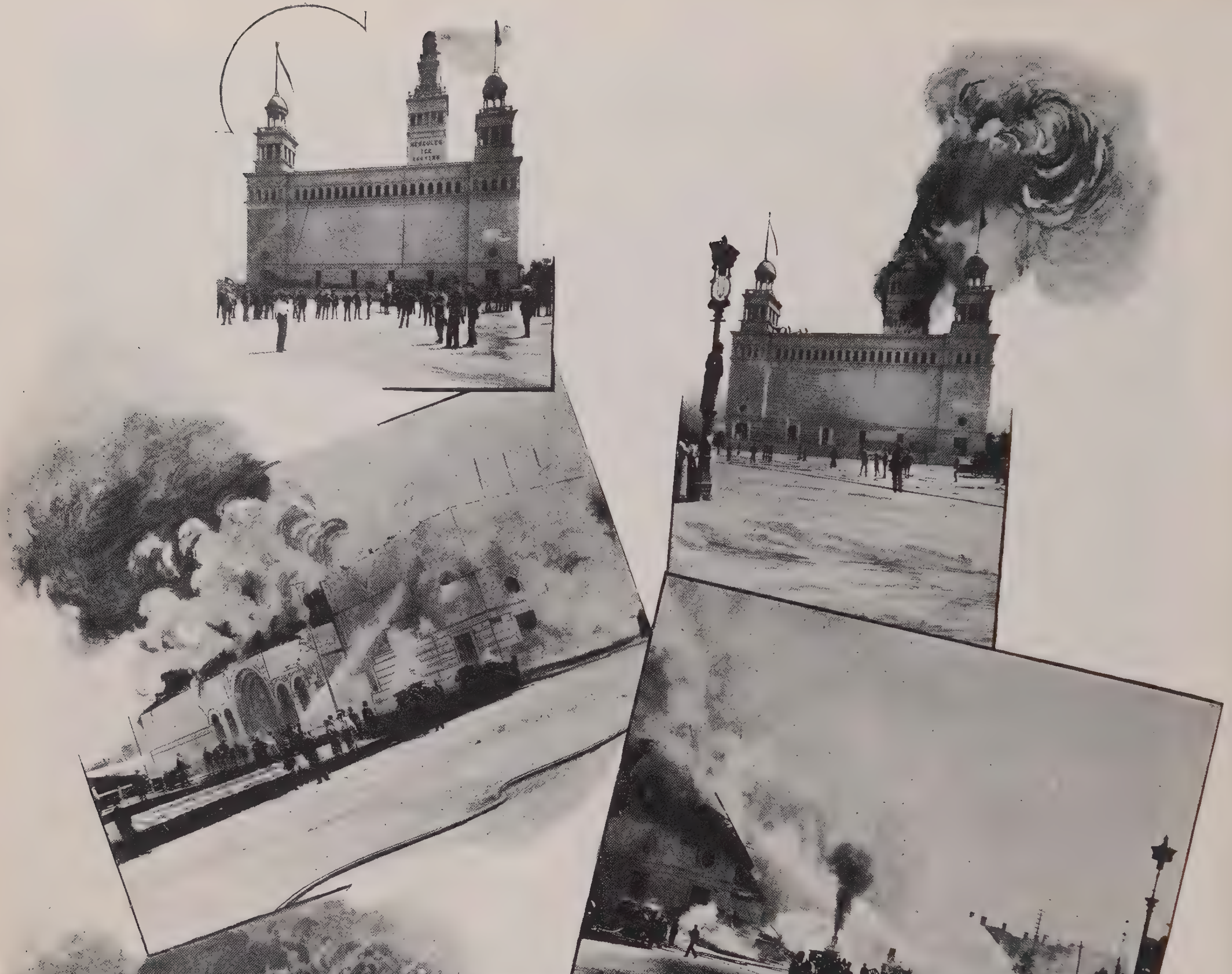
exceeding 350 revolutions to the minute. A feature in both is their small consumption of steam, which falls as low as 13 pounds an hour for each horse-power. In connection with this exhibit is a two-pole dynamo, generating electricity, through power supplied by the engine to which it is attached, at the rate of about 85 per cent of the indicated horse-power, the remainder being lost by friction. Here is a fair specimen of an English central station plant, ten of these sets forming the plant now in use at one of the largest London stations. By a Grantham firm is displayed a safety oil engine, in which the usual apparatus for firing the charge is dispensed with, the oil being converted into gas in a red-hot vaporizer. From Dumbarton works are models of quadruple expansion marine engines, now largely used by ocean and channel steamers. Among the exhibits in this group is a dual screw steam engine for propelling vessels, with concentric shafts, and without gear or belting. Worthy of note also is a large collection of beltings, including such as are made of slotted steel, leather, rubber, gutta percha, and textile fabrics, with other articles for railroad, military, and mechanical purposes.

Of apparatus for extinguishing fires there is a slender display, as also of machines for working in metal and wood, for lithographing and color printing, and for photo-mechanical and other mechanical processes of illustration, the last contained in the hall of Manufactures and Liberal Arts. Machinery for the fabrication of textiles is better represented, one firm sending a complete set of cotton cleaning, combing, and carding apparatus, and others spinning frames, and looms for cotton, wool, and silk, among the latter several of the Jacquard pattern. Of printing machines



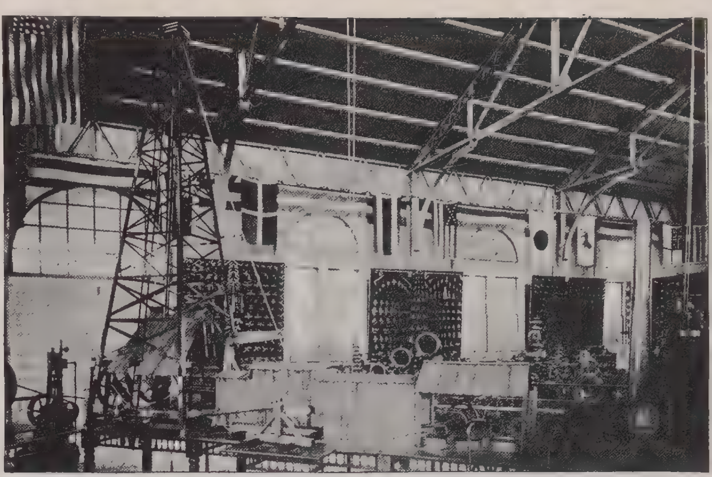
BELGIAN RAILWAY IRON

BELGIAN BELLOWS AND FORGE



BURNING OF THE COLD STORAGE BUILDING

OIL WELL DRILLING RIG

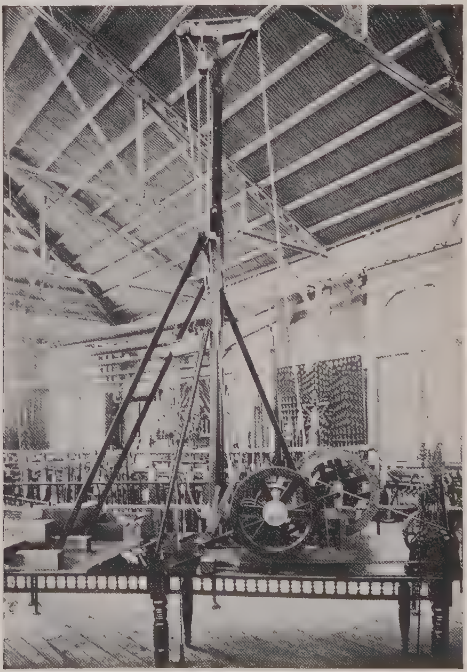


OIL BORING AND DRILLING APPARATUS

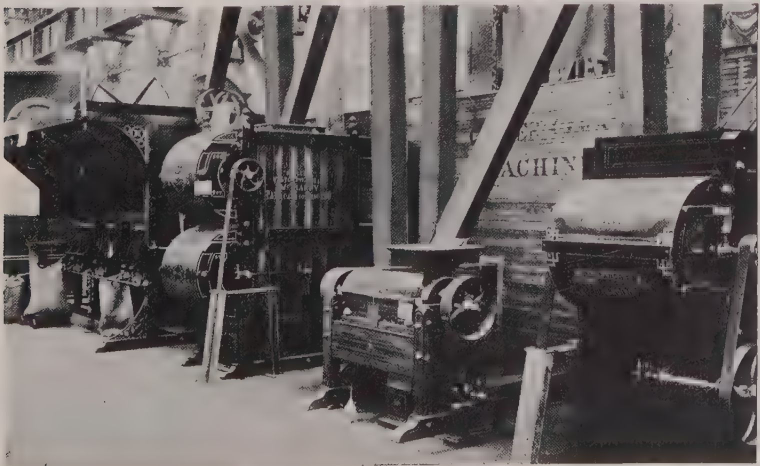
there is one which, in addition to its primary use, serves also for cutting, collecting, pasting, folding, and counting, and a London firm displays type distributing, composing, and justifying machines, with racks so arranged as to show the use of apparatus for distributing all the founts of ordinary type, from pica to pearl. A Leeds manufacturer has a machine by which bricks are made at a single operation, and a London establishment shows models of its kilns and ovens for burning bricks, tiles, pottery, and terra cotta ware, with samples of articles so burned. Of machinery for the preparation of food there are several exhibitors, one having a plant complete for bread and biscuit-making, for pastry, cakes, and confectionery. Finally there is in another group a so-called automatic refreshment stall, such as is used in factories and public streets for distributing light refreshments and temperance beverages.

As with most of the foreign participants, France has no very imposing display in Machinery hall, her exhibits consisting mainly of apparatus for the cutting of glass-ware, the manufacture of confectionery, soap, and candles, the grinding and polishing of lenses, and the making of delicate embroideries. In this section there is no massive machinery, the nearest approach to it being the display of mill-stones by a French quarryman, and a collection of castings and other articles from a firm of engineers and foundrymen. There are also exhibited by the Paris firm of A. Piat and company oscillating portable furnaces, and crucible cupolas, used among other purposes for gun-metal castings, statuary, and machinery bronze work, and ordinary brass castings.

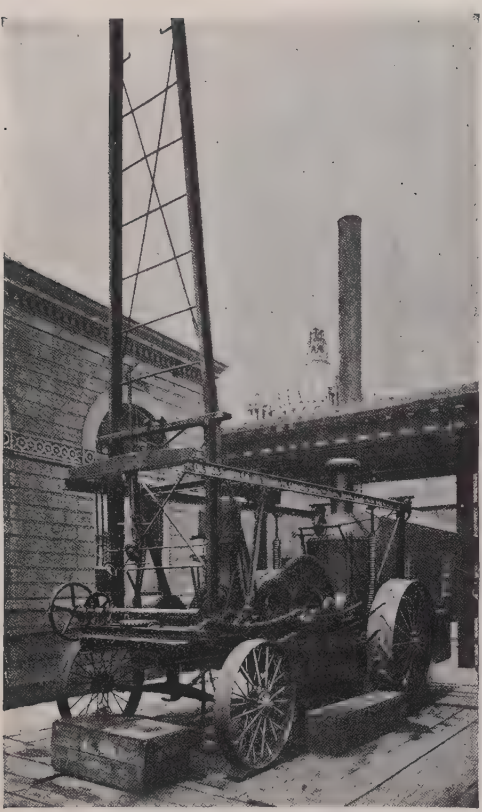
Adjoining the French section, Mexico and Russia occupy small areas, the latter covering about 3,000 square feet. The Mexican exhibit is mainly one of high-speed engines, of no great size, but powerful, and well constructed. Russia has models of her enginery of war, with a collection of petroleum grates and furnaces, charts and drawings from the



OIL MACHINERY



COFFEE CLEANING EXHIBIT, BRAZIL



OIL BORING AND DRILLING MACHINE

government institute of technology, and illustrations of the course of instruction pursued in the school for sub-marine divers, at Cronstadt. Methods of lighting by electric lamps, and of regulating the breathing of the divers are shown by photographs, and on a table near by is a huge diver's suit of orthodox pattern.

Austria occupies more than 8,000 square feet between the French and Belgian sections. In one of the booths is delicate glassware, much of it adorned with outlines of the Exposition buildings; in another, handkerchiefs, embroideries, and various fabrics. Among machines and appliances are those for making bon-bons, for lithographic work, and protective purposes, and for operating circular saws, while a Pilsen factory displays some specimens of ordnance, a large screw for a steamer, and photographs of armor which has been penetrated by missiles manufactured at its works.

The Brazilian booth, adjacent to the Austrian section, contains an exhibit of coffee cleaning apparatus, contributed by several San Paulo and Campia firms. One machine separates the coffee from the stones with which it may be mixed, the ventilator clearing away the leaves, earth, and other refuse; another hulls the coffee without breaking the kernels or allowing any to escape, reducing the shell almost to powder, which is removed by a connecting ventilator; a third segregates all the black and inferior grains, and allows the coffee to fall into a series of sieves, thus separating it into its several commercial grades.

A considerable area in the eastern portion of the main hall, between the power plant and the British section, is covered by the exhibits from Belgium. The most extensive display is from the works of a large iron and steel company, and consists of specimens of merchantable iron, with plates and curved sheets, and sections of girders, sleepers, and columns. Elsewhere is machinery for making worsted goods and embroideries, ice cream and confectionery. Compared with modern American appliances, the apparatus for extinguishing fires is of somewhat primitive fashion, the fire engines of Liège reminding one of the American hand machines of fifty years ago.

BRITISH SECTION

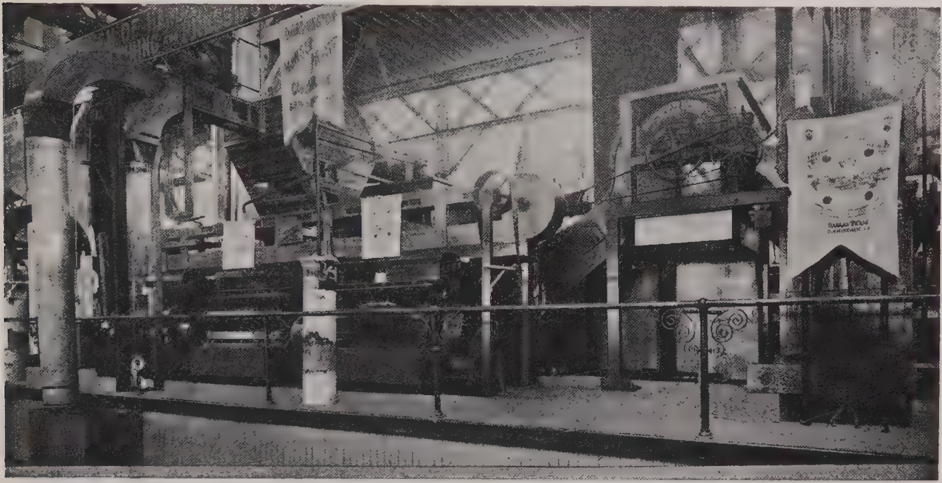
Near the eastern portico of the main hall is the Canadian section, the exhibits including a collection of small single-valve automatic engines. Here, also, is one of the very few boilers which are not in active use, a straw burning boiler, specially designed for the agriculturists of the sparsely timbered northwest territories. Wood and iron working machinery is well represented in this section, as are also such domestic appliances as washing machines, patent clothes lines, and meat choppers. There are several brick-making machines on exhibition, and the fire engine displayed by the Ontario works will bear comparison with those in the American department.

Southwest of the German section are the small exhibits of New South Wales and Sweden, the chief interest in the former centring in a case of electrotypes presented by the government printing office as samples of its work. A Swedish doctor of philosophy from Stockholm contributes a few dynamos, and an inventor of the same city shows a machine whereby can be made nearly 200 barrels an hour. Adjoining the Swedish section are a few small Spanish machines, including those for raising water, and for

SHALLOW OIL WELL APPARATUS

planing. In this vicinity also Switzerland and Italy have minor exhibits, the chief feature in that of the former being a practical illustration of processes of electro-plating with gold and silver. Lenses, embroidery machines, and oil manufactures are displayed in the Italian group.

World's Fair Miscellany.— Almost while in the act of penning my description of the Cold Storage building and its contents, came their destruction by fire on the evening of the 10th of July, 1893. This edifice was erected by the Hercules Iron company of Aurora, Illinois, and the exhibits, together with the systems which they illustrated, were those of the West Side Artificial Ice company, of Chicago. From the centre of the structure rose to a height of 220 feet a wooden tower, covered with staff, and surmounted by a dome. Here it was, near the base of the dome, that the fire was first discovered. The engines were quickly on hand, and from a narrow ledge, a few feet below, the men stood, hose in hand, prepared for action. But at this juncture tongues of fire shot forth near the base of the tower, and a moment later the flames broke out with a smothered roar from every portion of the tower, cutting off the retreat of the firemen. Then followed a scene of horror such as few have ever witnessed. Around this narrow ledge the firemen ran, vainly seeking an avenue of escape. One slid downward on a rope; another on a line of hose; but hose and rope snapped, and the men disappeared in flame and smoke. Some fell, and some threw themselves headlong on the roof, more than eighty feet below; and as the tower parted in the middle, and fell crashing into the burning gulf, the one human being who remained on the ledge was seen to leap into air, and then fall prone into the devouring sea.


COTTON MACHINERY

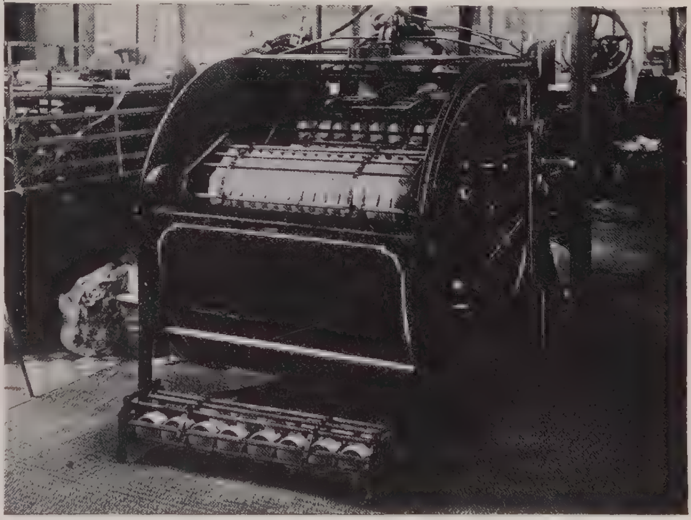
During the investigation of the coroner's jury it was shown that the steel smoke-stack enclosed within the tower was fourteen inches shorter than the structure itself. In the plans, as prepared by the architect, this space was to be occupied by a thimble for the protection of the exposed wood-work; but in the construction of the building this safeguard was omitted, and hence the disaster, with its attendant holocaust, in which seventeen lives were lost. Of the gate receipts of the following Sunday $25,000 was set apart by the management as the nucleus of a relief fund, and this was swelled by further contributions to nearly $100,000.

To the Westinghouse Electric and Manufacturing company was awarded the contract for providing the plant by which the buildings and grounds of the Exposition are supplied with incandescent lights, and for this purpose it placed in Machinery hall fourteen machines, with an aggregate capacity of 158,000 sixteen-candle power lamps. In the construction of its system were used some forty-five miles of wire, while the Exposition authorities ordered 250 miles of wire, covered with rubber, or lead, for the completion of the arc circuits. There are also about forty miles of conductors.

Covering a large area directly south of Machinery hall are exhibits connected with the oil industries of the country. Great derricks, drilling machines, and tanks are as profusely displayed as in the oil regions of Pennsylvania and Ohio. The centre of these exhibits is a stone building, erected by the Oil Well Supply company, of Pittsburg, outside of which are all the apparatus required for boring and drilling. Within the building, which is decorated with the flags of all nations, are models of machines showing the development of various processes of obtaining oil, with a large collection of pumps in operation, and of fittings and tools used in boring for petroleum and gas. Portable drills for surface wells, and the large machines designed for boring to a depth of about 3,000 feet are shown both as models and originals. In the centre of the building are photographic and other illustrations contrasting the present apparatus of the company with such as was used by its founder thirty years ago.

About 100 feet south-east of the main hall, and a short distance from Michigan's logging camp, is a model saw-mill erected for the purpose of exhibiting, in operation, the most improved machines for transforming lumber into its manufactures, and for keeping machinery in repair. The north-west supplies white pine, the south yellow pine, the west cedar and cottonwood, and other sections many varieties of hard-wood, all of which are made into such articles as shingles, barrels, and boards. About a dozen companies by which are made the larger machines for working wood, place specimens of their work in the model mill. There are portable saw-mills, jig, and circular saws, log rollers, and all kinds of machines for sharpening and setting saws, with a collection of filing machinery.

As previously noted, the exhibit of road-making machines although included in this department was considerably scattered, some of the rollers being placed in the Transportation building, and others in the Mining and Agricultural buildings, and the model saw-mill. At times a collective exhibit of these machines in actual operation may be seen near the shore of the south pond, and the Intramural railroad.


COLUMBIA DISH WASHER

The largest boiler in the plant is in the boiler-house extension, and is named the Morrin's Climax, It generates steam equal to 1,500 horse-power, and has a heating surface of 10,000 square feet. The boilers are connected with the oil storage tanks by steam coils, in which the oil may be heated in cold weather. Exhibitors may select for themselves the burner to be used for their apparatus. In some cases the burners and connections are kept behind fire-proof doors, the supply of air passing from the rear to the front of the furnace, where it comes in contact with a spray of oil, and is heated to a high temperature before combustion takes place.

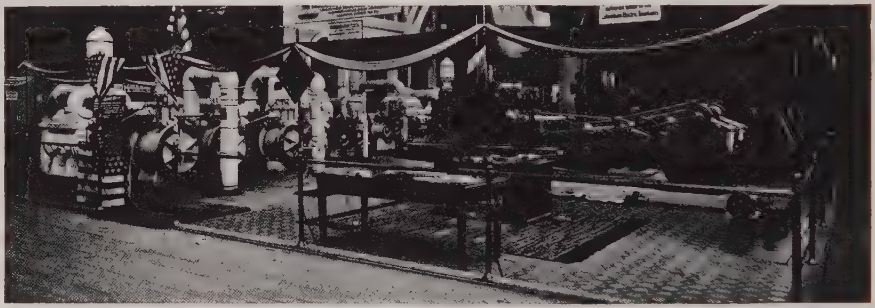
By the Allis engine in Machinery hall was virtually put in motion the entire mechanism of the Exposition. When President Cleveland pressed the electric button, and closed the circuit, an electric valve attached to a four-inch pipe was opened, steam being thus admitted to the engine which, in turn, brought its two great dynamos into play. Near this engine is one of 1,000 horse-power, and with a fly-wheel 28 feet in diameter, belted to a dynamo. All exhibitors furnished with power to operate engines or machinery from the regular plant, paid the department at the rate of $60 per horse-power for the season, if their machines were run continuously. The amount of power furnished gratuitously was only sufficient to keep a machine long enough in motion to show its workings.

Except by specialists, it is not generally known that wood, granite, cast-iron, and copper, were formerly used in the construction of boilers, the last as recently as thirty years ago. When inventors were called upon to meet the demand of manufacturers for something that would withstand a higher pressure, they were obliged to substitute plate iron and steel, and as we have seen in speaking of the boiler plant of Machinery hall, to distribute the aggregate power generated among numerous tubes, or miniature boilers.

While no great progress has been made within recent years toward increasing the efficiency of steam boilers, there has been a large reduction in the quantity of steam consumed by engines in proportion to their horse-power, amounting probably to 30 per cent within the last score of years. This has been mainly caused by the more general introduction of the compound system, one by no means new, but which, for whatever reason, engineers were slow to adopt. It is to be regretted that no provision has been made in Machinery hall for a comparative test of boilers and engines, for which an excellent opportunity is here afforded.

In the eastern gallery is a black walnut case from which protrude ten levers, and from these pulleys connect with the bells in the tower above, whence their chimes are heard at intervals afar in the grounds. The bells are fastened to a massive oak frame, the heaviest weighing 3,000 pounds, and the lightest, 300. It is stated that the same company which manufactured the first large chime of bells in the United States, more than fifty years ago, furnished the one in Machinery hall.

Among the miscellaneous exhibits is that of the so-called Working-Men's Insurance in the form of a series of tables, or charts. This is from the Imperial Insurance department of the German empire, and intended to bring to the attention of Americans its system of compulsory insurance. Its three funds, providing against accident, sickness, and old age, are contributed from state employers and employés, the payments of each being determined by the aggregate of wages disbursed, and of individual wages received.


WORTHINGTON PUMP EXHIBIT

Another minor exhibit in the German section is a cigar-rolling machine that makes cigars of every shape, and of which there are many thousands in use. Still another consists of dough-making machines, of a pattern for which it is claimed that more than thirty exposition medals have been received. A special class includes a large assortment of miscellaneous machinery and processes, including such as are used for the reproduction of oil paintings, for polishing plate-glass, for shelling grain, and for making syrup out of potatoes. The only mural painting in the German pavilion is on the northern wall above the portal, and represents a longitudinal section of an armored turret for coast defense, constructed by Friedrich Krupp.

Saturday, the 26th of August, was known as Machinery hall day, when was given the first of a series of entertainments in connection with the main departments of the Fair. At nine o'clock, when the great chime of bells rang forth from the tower, the building was already filled, and soon afterward was densely crowded, thousands passing in and out in one unbroken stream. At noon were songs by jubilee singers, and an hour later, diving exhibitions in the lagoon which flanks the Machinery building. First was illustrated the system of telephoning under water, as adopted by the Russian naval school at Cronstadt, the diver, one Assenig Korotaeffsky, encasing himself in a diving suit, weighted with lead, and, as he sank and emerged from the water, suggesting that a new species of sea-serpent had been added to the World's Fair exhibits. Then came a pitched battle between crews selected from the boiler and engine-rooms, attired in bathing suits, and placed on board scows forty feet apart. Both were supplied with hoses to which a pressure of eighty pounds was furnished by Worthington pumps, and at a given signal the fight began, victory declaring for the crew that should knock its opponents overboard into the lagoon. The captain of one of the boats weighed about 300 pounds, and as he stood grasping his hose, arrayed in a close-fitting suit with alternate stripes of black and red, his appearance was greeted with roars of merriment. After a brief but spirited contest, his men were worsted, and their scow began to sink, the fat man betaking himself and his 300 pounds to shore as best he could. This was followed by an aquatic contest between two companies of so-called royal horse marines, with brooms as weapons, and steeds in the shape of barrels, sufficiently weighted, and with imitation heads and tails. After this was a greased pole performance, several competitors for the prizes which hung at its end, suspended over the pond, receiving instead a fresh water bath, among them the fat man, who after a futile attempt plunged like a porpoise into the lagoon. Other diversions followed, accompanied with music, and special exhibits of machinery in motion.

CHAPTER THE THIRTEENTH

AGRICULTURE

THE Agricultural building is among the most sightly of the Exposition palaces, its chaste and serious design, its wealth of decorations, and richness and variety of detail, making it one of the most refined and luxurious homes of industry that welcome this gathering of the nations. Fronting on the main court 800 feet, with a depth of 500, and with its eastern façade almost touching the waters of the lake, this structure occupies, apart from its annexes, a space of some nine and a half acres. Built with a careful regard to its effect on adjacent edifices, it was planned in such fashion as to secure the best disposition of its contents, together with the lighting needed for a comparison of the agricultural products of our own and foreign lands, between many of which their delicate shades of distinction cannot be readily detected.

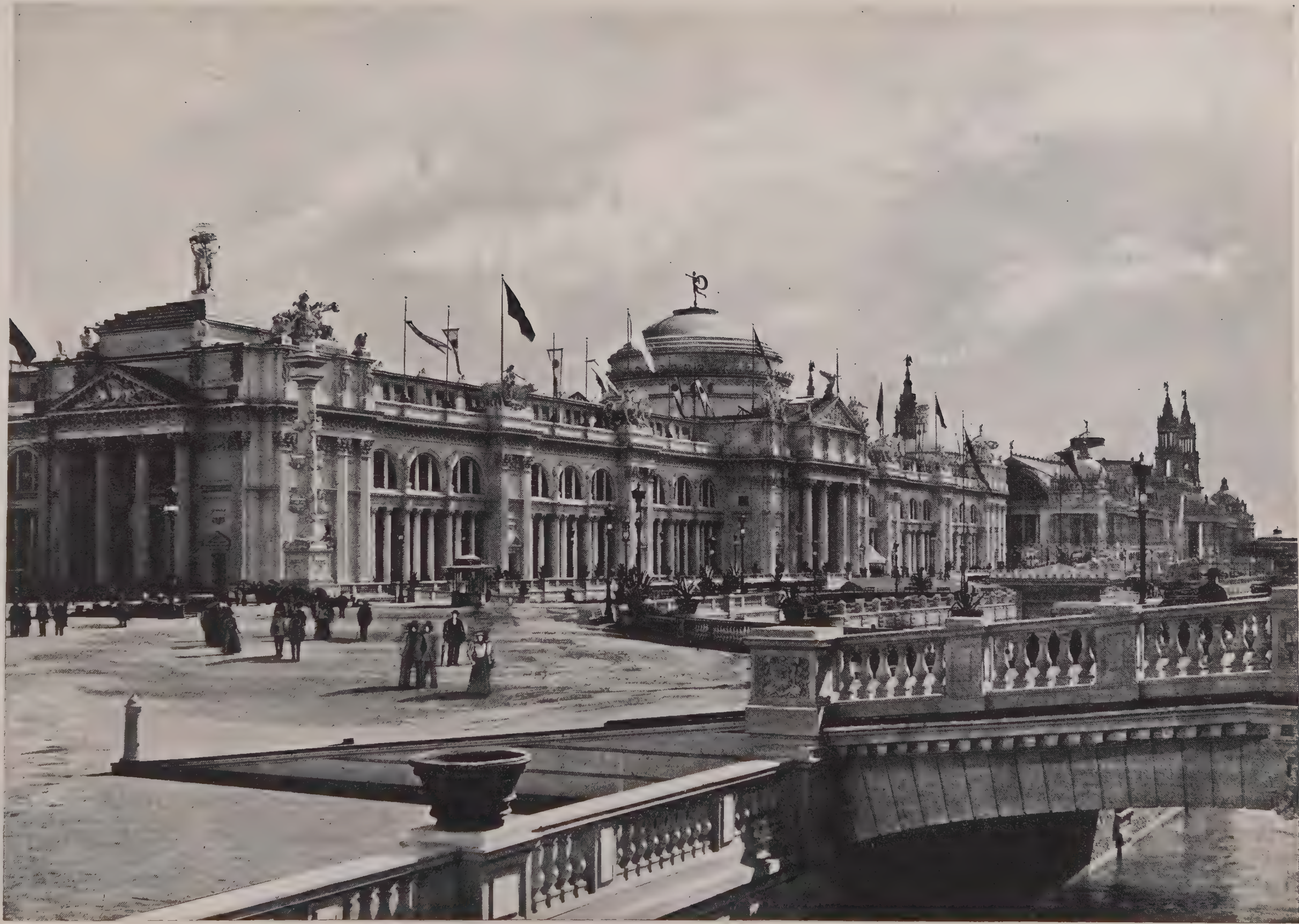
SIGN OF THE ZODIAC

ABUNDANCE. MARTINY

After considering their plan, the New York firm of architects by whom was designed this temple of Ceres, decided to erect their main building around a hollow square, divided in the centre by two open naves intersecting at right angles, and on their sides two-storied aisles, with longitudinal passage-ways through the four courts into which the floor is thus divided. Passing between the Corinthian pillars at the principal entrance, more than 60 feet wide, the visitor enters a vestibule profusely adorned with statuary emblematical of agriculture and agricultural pursuits, the vestibule leading into a rotunda, 100 feet in diameter, and surmounted by a glass dome 130 feet in height. At the top of the building and around it is an arcade, and at the corner are pavilions, also with domical treatment. The edifice is fashioned after the style of the classic renaissance; portions of its walls are painted with allegorical figures, and on the outer sides, as well as in the interior is a luxury of pictorial, sculptural, and other artistic ornaments, relieving the stateliness of the design.

While none but the most captious among the pilgrims of the Fair will be disposed to find fault with this structure, in itself a well-nigh perfect work of art, it has been objected, and not without reason, that nearly one half of the space was devoted to aisles and other passage-ways. To the distribution of that space exception has also been taken; but by the artificers and managers these apparent defects are explained through considerations that need not here be mentioned. To Great Britain were allotted more than 13,000 feet, and to France, a greater agricultural country, only 7,000 feet. Australia has 8,600 feet, while to such great agricultural states as Kansas and California, both with a much larger volume and variety of agricultural production, only some 2,000 feet were awarded. Russia has 9,500 feet, and Italy and Spain but 3,000 or 3,500 feet for each; but in all cases the allotment of space has been regulated rather by the character and extent of the display than by the agricultural output of the territorial divisions here represented.

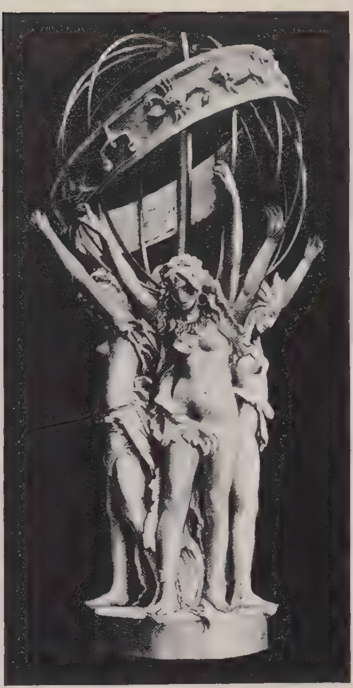
Adjoining the Agricultural building is a large annex, near one of the stations of the elevated railway, and of which a portion is used as an assembly hall, and as a common meeting ground for persons engaged or interested in agricultural and stock-raising industries. On the ground floor is a bureau of information, where



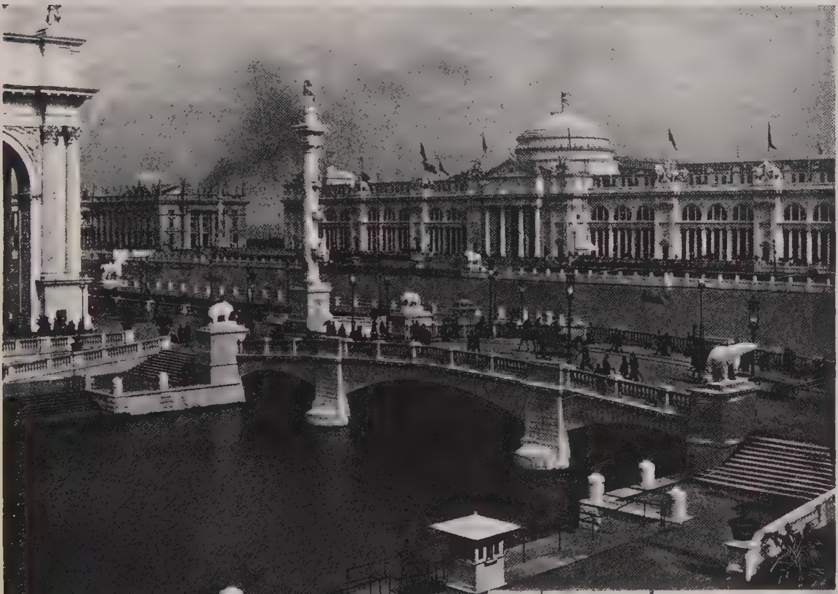
AGRICULTURAL BUILDING

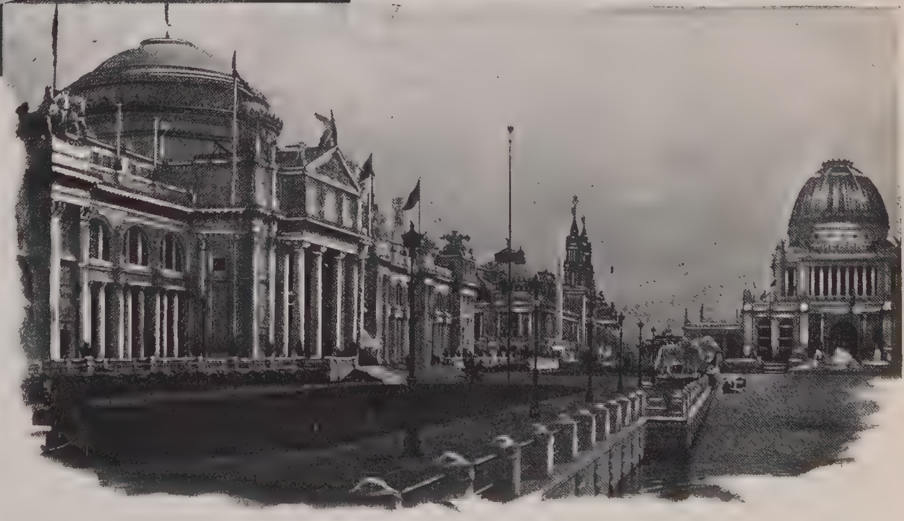
are attendants whose duty it is to give to visitors such knowledge as they may desire, not only concerning the hall and its purposes, but as to the main building and its contents, with other portions of the Exposition. Here and on the second floor are waiting-rooms and apartments suitable for committees and associations, whose secretaries are always at hand.

In none of the homes of the Fair has sculptural and pictorial embellishment been more happily blended with architectural design. Above the gilded dome is poised St Gauden's gilded statue of Diana, appearing to better advantage as thus transferred to its lofty pedestal from the Madison Square garden in New York. Over the corner pavilions are Martiny's figures of the races, in four groups of colossal female forms, supporting mammoth globes. All are identical in pose, and it is said, produced from a single mould, a different head being placed on each of the models. On the pediments of these pavilions are groups by the same artist, representing a shepherdess with her flock, and a shepherd with his dogs, all in his happiest style. Other of his contributions are those which portray, in classic symbolism, the signs of the zodiac and the emblems of abundance, the fluted drapery of the latter concealing their opulence of form, some holding under their wings the horns of plenty, and others with tablets on which are inscribed the names of products emblematic of the seasons. Still another of his groups is typical of agriculture, the tall impersonation of that industry rising above the branching horns of oxen, yet in perfect symmetry and poise. Over the principal entrance is a statue of Ceres, by the Florentine artist Larkin J. Mead, who parted with his treasure somewhat reluctantly, and only because, as he remarked, it would reveal to our American artists what sculpture really is. Let us hope that his brethren of the craft have laid the lesson to heart.



THE FOUR RACES





SECTIONS OF AGRICULTURAL BUILDING

The decorations in graphic art are by George W. Maynard, of New York. At one side of the main entrance Cybele is seated in her chariot, drawn by lions, and on the opposite side, in a car to which winged dragons are yoked, is King Triptolemus, sent forth by the mother of the gods to instruct all the nations of earth in the science of agriculture. Between them are allegorical figures set in a framework of grain and fruit. At the corner pavilions are figures emblematic of the seasons, and on the friezes above, those of domesticated animals.

In the department of agriculture are included not only the fruits of the soil in the shape of food and forage plants, but all the articles manufactured from those products, whether in solid or liquid form. Thus in one group we find bread and biscuits, starches and pastes; in another, sugars and syrups; in a third, malt and

PANEL, AUTUMN, MAYNARD

GROUP BY MARTINY

alcoholic liquors, wines being represented in the Horticultural division. Here also are meats, smoked, salted, canned, or as extracts, and in a separate structure, the products of the dairy. Agricultural machinery, implements, and processes are fully represented, with fertilizing substances, both animal and mineral. There are farm buildings, models, methods, plans, and statistics, and classed in this division, though housed elsewhere are exhibits of Forestry, and all that the forest supplies.

To the residents of the several states of which Chicago is the main centre of distribution, and supply, the Exposition has no more attractive features than its Agricultural and Live-stock departments, the latter presently to be described. Of the entire grain receipts of that city, valued for 1892 at about $150,000,000, from eighty to ninety per cent is shipped to domestic and foreign markets, where also is forwarded either on hoof or as meats and lard, as hides and wool, the bulk of its live-stock consignments, representing for the same year a valuation of more than $250,000,000. The region tributary to Chicago, including, as it does, a wide section of the western and middle states, is largely devoted to agriculture and stock raising, furnishing indeed a very considerable proportion of the food supply of the world.

In all the United States there are probably not less than 10,000,000 persons engaged in various branches of agriculture, while each one so engaged supports on an average at least two other persons. Thus it will be seen that nearly one half the population of the republic is directly dependent on agriculture for a livelihood, the

PANEL, CYBELE, MAYNARD

number actually employed far exceeding those engaged in all other fields of labor. Add to this the part that agriculture plays in our commerce, our manufacturing, shipping, railroad, and other interests, and it probably surpasses in economic, if not in money value, all other productive industries combined. While in some directions, and especially in cereals, over-production has been followed by a heavy decline in prices, leaving but the smallest margin of profit, and in unfavorable years a positive loss, the more intelligent farmers have fully held their own, many of them raising a variety of products, and with special regard to present and prospective demand.

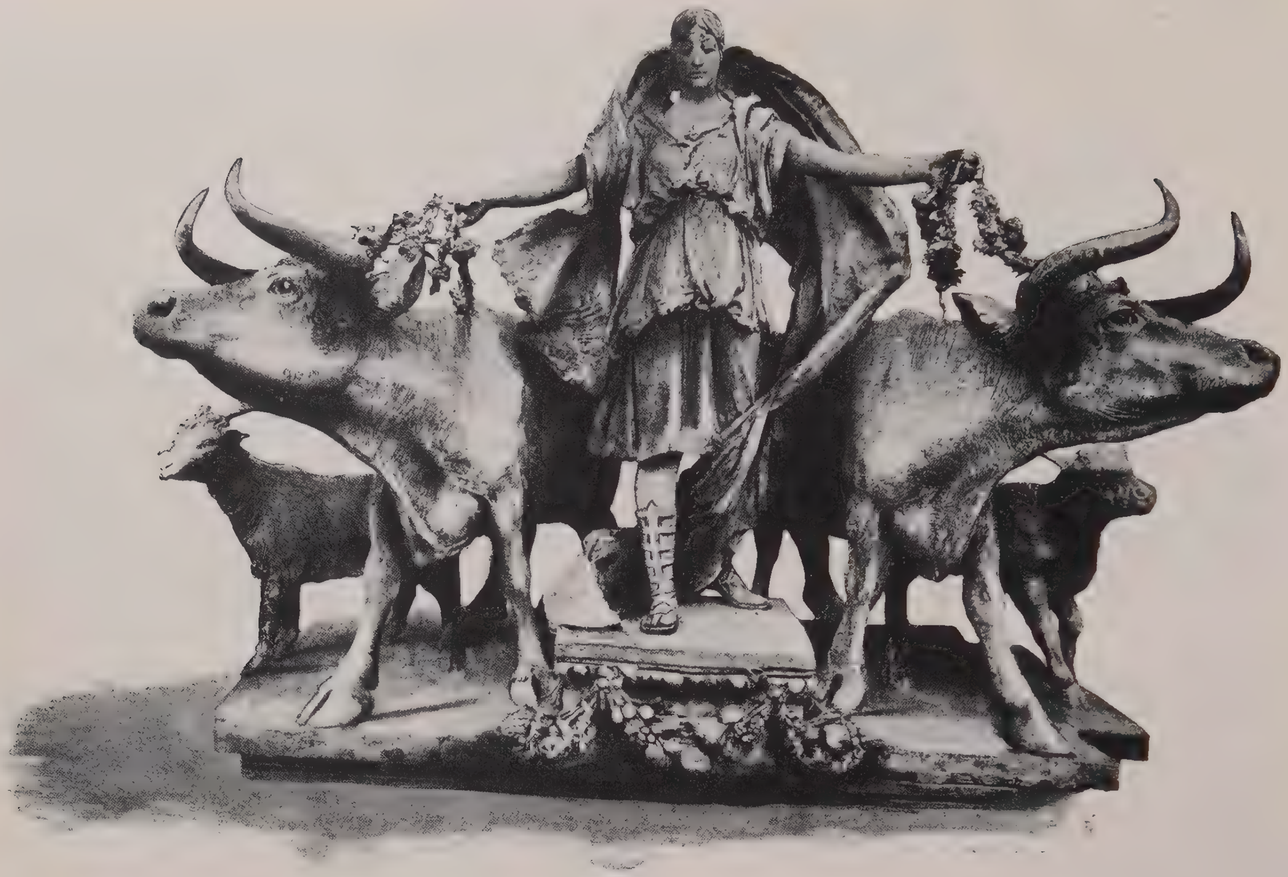
SYMBOLICAL GROUP

In no country in the world are there so many farms of considerable size held and worked by individual owners. If in France, Belgium, and a few other countries, there is, in proportion to population, a larger number of proprietary farmers, the average of their holdings is by comparison almost infinitesimal. Of the 600,000 or 700,000 Belgian farms, for instance, nearly one-half do not exceed ten acres; many have less than five acres, and instances are not rare where a family is supported on a single acre. Of the 5,000,000 farms under cultivation in the United States, at least 3,500,000 are worked by their owners in holdings of from 50 to 500 acres, and of farmers with more than 500 acres there are more than of those with ten-acre patches or less. Of tenant farmers there are about 500,000 who pay a money rental, and perhaps twice that number whose rent consists of a certain portion of their crops.

Of the entire area of the United States, less than one-half is included in its farms, and less than one-third is under actual cultivation, the remaining half still containing fertile tracts, though most of it consists of grazing lands, of water surfaces, of mountain ranges, and of the desert lands west of the Rocky mountains. Meanwhile the more valuable portions of these lands are being absorbed under the provisions of the homestead and timber acts, located with scrip and warrants, or selected by railroads, at the rate of 15,000,000 to 20,000,000 acres a year. In other words, a territory almost as large as that of New England, excluding the single state of Massachusetts, is being segregated every twelvemonth from that which is left of the national domain.

During the five years ending with 1892, the United States produced an average crop of more than 3,000,000,000 bushels of cereals, maize ranking first as to volume and value of production, and next, in the order named, oats, wheat, barley, rye, and buckwheat. In 1892 the acreage under cultivation was somewhat smaller than in 1888, and with a more considerable

QUADRIGA ON PERISTYLE



MARTINY'S AGRICULTURE

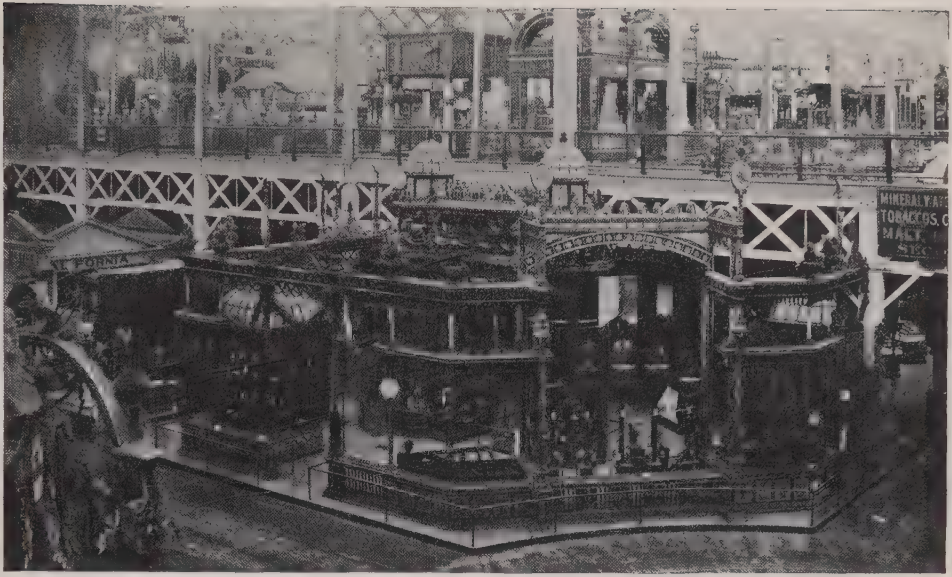
reduction in yield. The best of the intervening seasons was in 1891, when from 142,000,000 acres were produced 3,400,000,000 bushels, worth $1,600,000,000, or an average of 24 bushels, but with a money value of less than $11 to the acre. For the following year the total crop fell to 2,800,000,000 bushels, and the average to 20 bushels, with a slight reduction in acreage, and proportionate returns. Of wheat there were produced in that year 516,000,000 bushels; of maize, 1,628,000,000, and of oats, 661,000,000 bushels, with acreages of 13, 23, and 24 bushels respectively. Considering the low prices then prevailing, and the still lower rates current during the following harvest season, it will be seen that except on a large scale, and with the most improved of labor saving appliances, the production of cereals is no longer a profitable industry.

Of hay there were produced, in 1890, some 40,000,000 tons from about as many acres; of cotton, 7,400,000 bales from 20,000,000 acres; of flax, 10,250,000 pounds of seed, and 240,000 of fibre from 1,300,000 acres. Of tobacco the average production may be stated at 500,000,000 pounds; of rice, one-fourth of that quantity, and of cane, beet, sorghum, and maple sugar, 400,000,000 pounds, or little more than ten per cent of the consumption; for the United States is a great sugar consuming country, using at least 60 pounds a year per capita of its population. Such are in brief the recent annals, and the present condition of leading agricultural interests as repre-

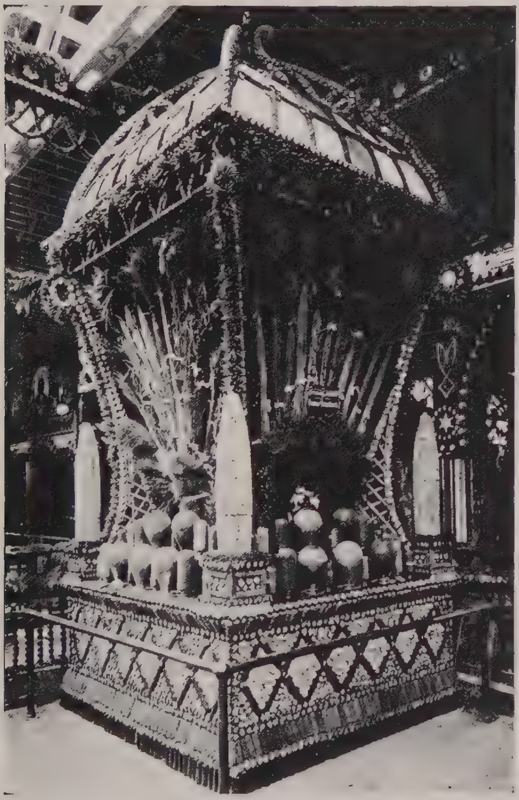
VIEW FROM NORTH GALLERY

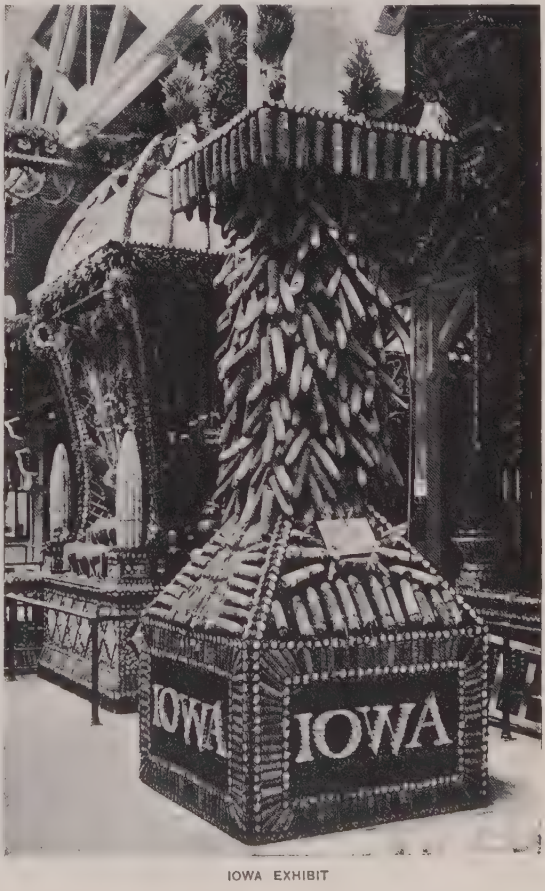
ROTUNDA

sented at the Fair, and nowhere can be compared to better advantage the products of the great food-producing sections of the republic, and these again with the products of foreign lands.


IOWA PAVILION

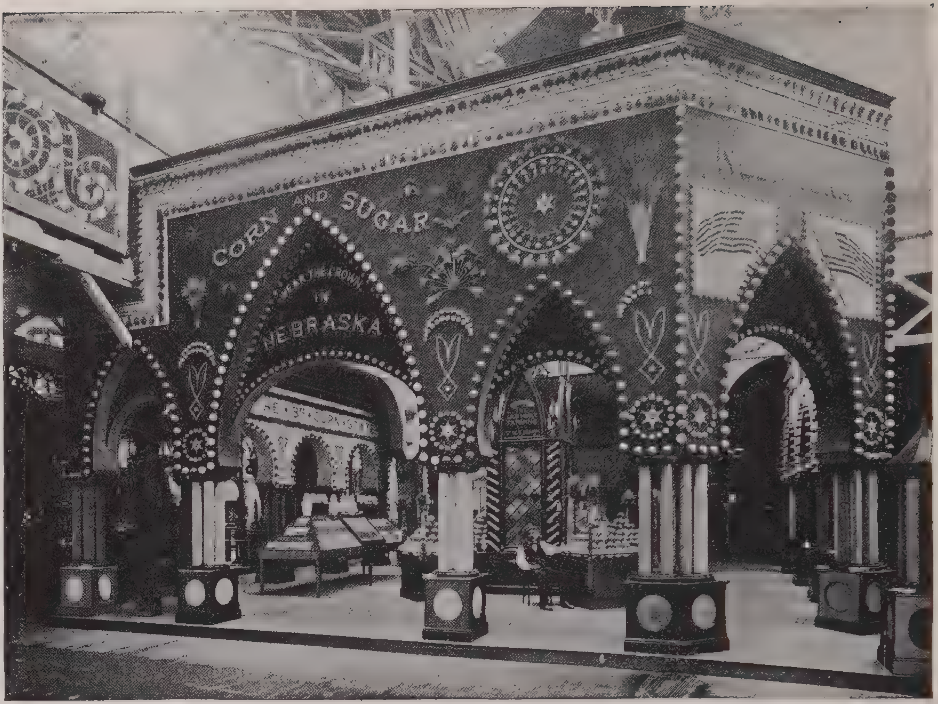
Between the annex and the central transverse nave of the main hall are the exhibits of the various states, of the American agricultural colleges, and experimental stations, and several minor foreign countries. Fronting on this nave are the pavilions of the leading agricultural states, including Iowa, Illinois, Ohio, Indiana, Minnesota, Wisconsin, Michigan, Nebraska, New York, Pennsylvania, Kentucky, and North Carolina. Iowa occupies a central position among the sisterhood, and one in perfect keeping with her geographical position. In her palace of corn, built in the Pompeiian style of architecture, are contained more than 130 varieties of grain. In front is a railing formed of long glass tubes, filled with samples of her soil, the caps above them composed of grains and other products. Red, white, and blue corn decorate the arches and pillars of the interior, in imitation of mosaic work, and at the base of each column are wisps and sheaves of grain. The pyramids within the palace, and the domes which surmount it, are artistically fashioned of corn cobs, kernels, and husks, while the less attractive exhibits, but those which better illustrate the cereal wealth of the state, are classified and arranged as grain in and out of the ear. The pavilion covers an area of more than 2,000 square feet, and aptly represents a form of industry in which at least two thirds of the exhibitors are engaged.


IOWA EXHIBIT


IOWA EXHIBIT

The pillars which support Nebraska's spacious pavilion are filled with her corn, wheat, and other grains, the first of these products being most extensively used in the decorations. One of the most important of her industries is the raising of corn for the manufacture of brooms, and these household articles are fashioned into several unique designs. In the centre of the Michigan section is a Corinthian temple, surmounted by a shield bearing her coat of arms. Above the main entrance is represented a family group, fashioned in corn and wheat, its four members on their way to the harvest field. The exhibits come from all portions of a state whose surface and soil are greatly diversified, and hence are of a miscellaneous character, including wheat, corn, oats, rye, peas, beans, buckwheat, timothy, and clover, with many varieties of seeds, nuts, and vegetables, and a small display of melons.

Wisconsin's oaken pavilion, whose sides are formed of glass compartments for the display of cereal products, is typical of that substantial and prosperous state, while in the grouping of different grains in beautiful designs, and the decoration of the pillars and roof with the fruits of her soil are expressed the artistic tastes of one of the most cultured of western communities. There are also photographs of model farm buildings, and of rural scenes, with a series of colored maps contributed by the chief of the weather service, representing climatic changes and conditions. The exhibit includes, in nearly 1,000 classes, all grades of wheat, corn, oats, barley, rye, buckwheat, peas and beans, with seeds of many varieties, as flax, timothy, red top, blue grass, millet, carroway, and clover, with hops, German vetches, and sorghum, and with grasses and forage plants of more than sixty kinds.



NEBRASKA PAVILION

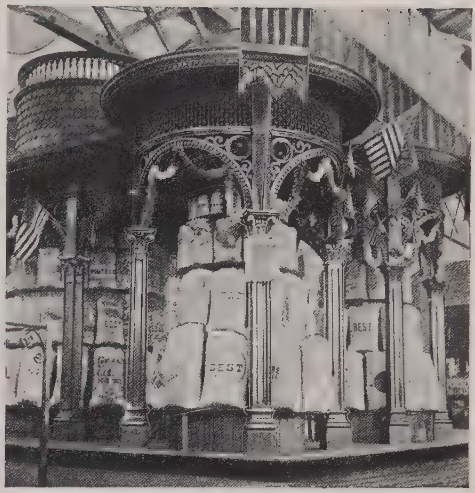
NEBRASKA EXHIBIT

Heads of grain and native grasses form the appropriate materials of which largely consists the decorative scheme of the Minnesota pavilion, planned in a series of arches, and with pillars festooned in cereal and floral designs. Its chief ornament is the octagonal tower upon whose panels are pictorial effects in wheat and grasses, emblematic of the history and resources of the state. Among the grains, which are displayed in jars barley is a prominent variety, for in Minnesota a strong effort is being made to encourage the raising of this cereal for consumption by Canadian maltsters.

Facing the south-eastern section of the rotunda is Pennsylvania's exhibit, housed in a structure whose base is of many colored corns arranged in geometric figures, with wreaths and borders of feather-like grasses. The roof and entrance are also decorated with designs in wheat and corn, while above all its rich display is a bust of William Penn, calmly surveying the agricultural evolution of by-gone ages. On one of the panels are reproduced the arms of the state—two sturdy farm-horses, one of them in its harness, with a shield surmounted by an eagle, and the well-known Pennsylvania motto, Virtue, Liberty, and Independence. On either side are panels covered with green moss, and serving as a

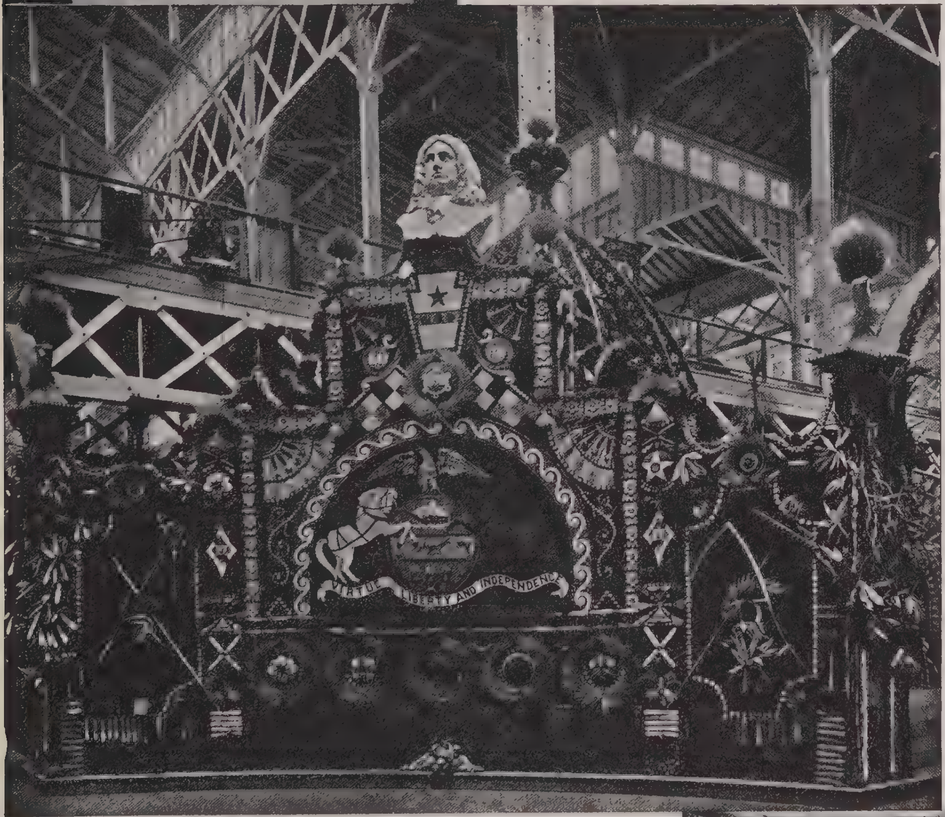
MICHIGAN'S SECTION

background for a group of agricultural implements adorned with ribbons, and wreaths of grass. Above the coat of arms is a keystone, fashioned of kernels of white and yellow corn. The keystone in truth is omnipresent, and in every conceivable design, so that never for a moment is the visitor allowed to forget that this, the so-called keystone state, is the one which held together the sections of the union in their hour of sorest trial.



FLOUR EXHIBIT, MINNESOTA

With its quaint and yet tasteful embellishment, its old-fashioned fireplace, where the chimney-piece, the chimney ornaments, and even the andirons are made of corn, the pavilion, with its wealth of decoration, forms of itself a more interesting display than its contents can possibly be. Among the latter are grains, grasses, and seeds in many varieties, with specimens of hops, and a case filled with tobacco in the leaf. An interesting exhibit is that of the Woman's Silk Culture association, whose headquarters are in Philadelphia. In the form of an illustration is the silk-worm feeding on the mulberry leaf, and near by are glass jars filled with cocoons, and bundles of raw silk, and spools of sewing silk, the latter in every shade of dye. Adjacent to this group are rich silken fabrics and festoons of flags draped around a goodly array of diplomas from prominent agricultural societies.

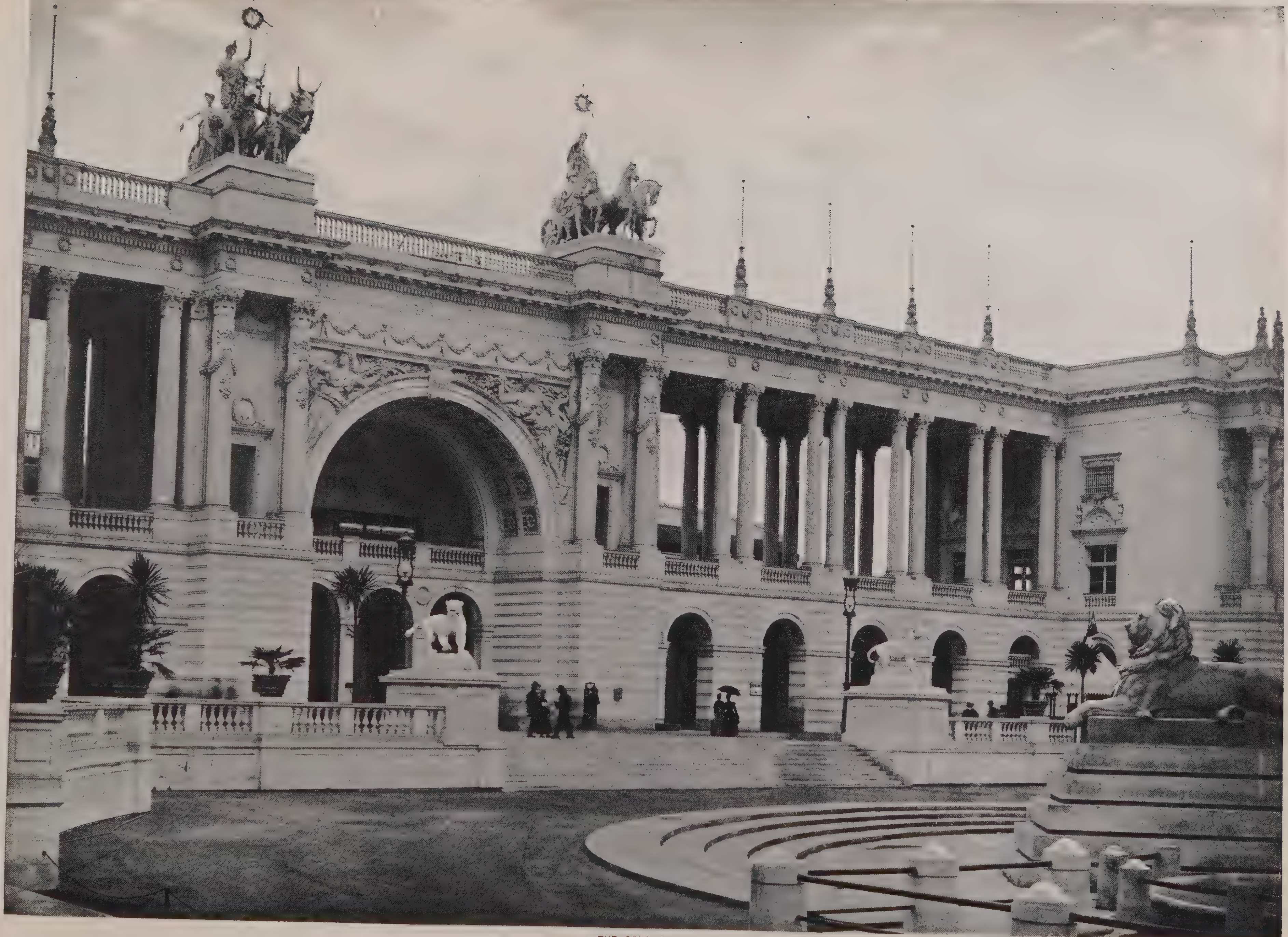


PENNSYLVANIA PAVILION

In a choice collection of photographs are represented Pennsylvania farm-houses of ideal type, embowered in orchards, and overlooking fertile fields. Tasteful and homelike are these habitations, some of them, though almost coeval with the declaration of independence, showing no signs of decay. Worthy of note also are the charts and handsomely bound agricultural reports, in which is a statement of the agricultural and mining products, and the commerce of Pennsylvania as compared with the sisterhood of states.

Next to the Pennsylvania collection is the pavilion of Illinois, one of the most ornate in the American section, though sharing the honors with other structures, and especially with that of Iowa. A commendable

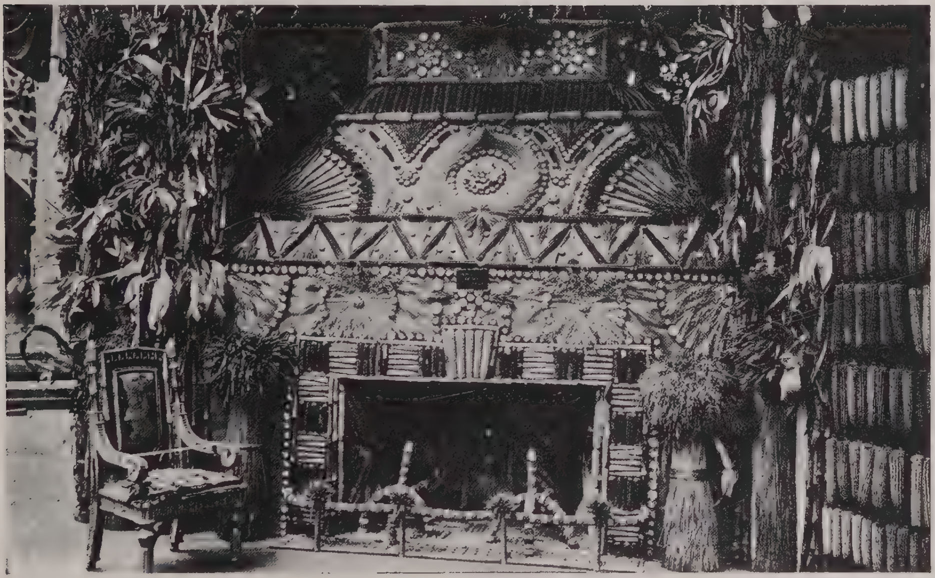
PENNSYLVANIA SEED AND GRAIN



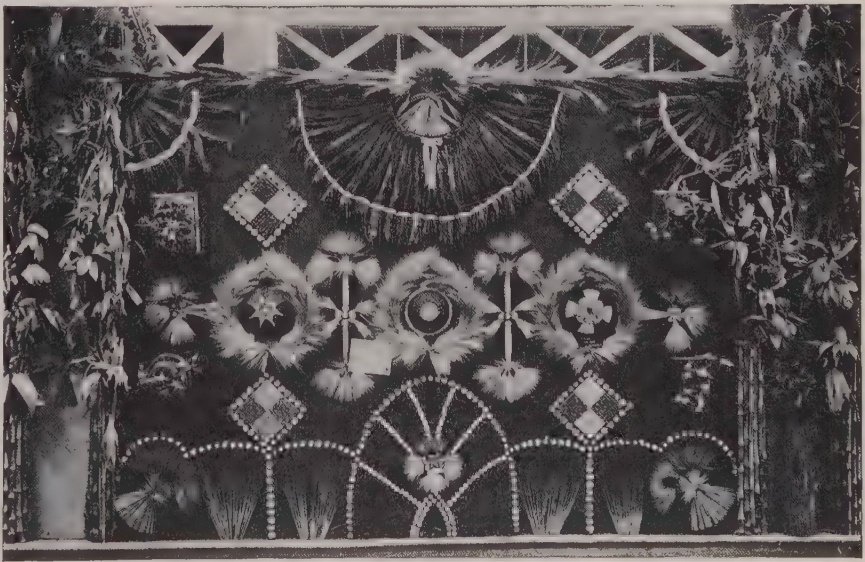
THE COLONNADE

feature, and one that is lacking in many portions of Agricultural hall, is its plentiful supply of comfortable seats, thus making it a favorite resort for tired visitors. There are four entrances to this pavilion, and in its centre is a corn pagoda, its base composed of jars of grain, and aptly representing one of the leading industries of a state whose crop of maize has averaged for a score of years more than 200,000,000 bushels. In glass cases set into the walls are numerous specimens of cereal and other produce, the several groups including many kinds of grain, grasses, and forage plants. Two of the groups consist almost entirely of vegetables and broom corn; a third of sorghum, and sugar-cane; a fourth of tobacco, hops, and peppers, and a fifth of hemp, flax, and cotton. Worthy of note is the variety of articles displayed by single exhibitors, many of whom show, side by side, their samples of wheat, corn, oats, barley, rye, buckwheat, grasses, and forage plants, thus illustrating their diversity of products, for the Illinois farmer, like the Illinois merchant and manufacturer, is fully abreast of the times.

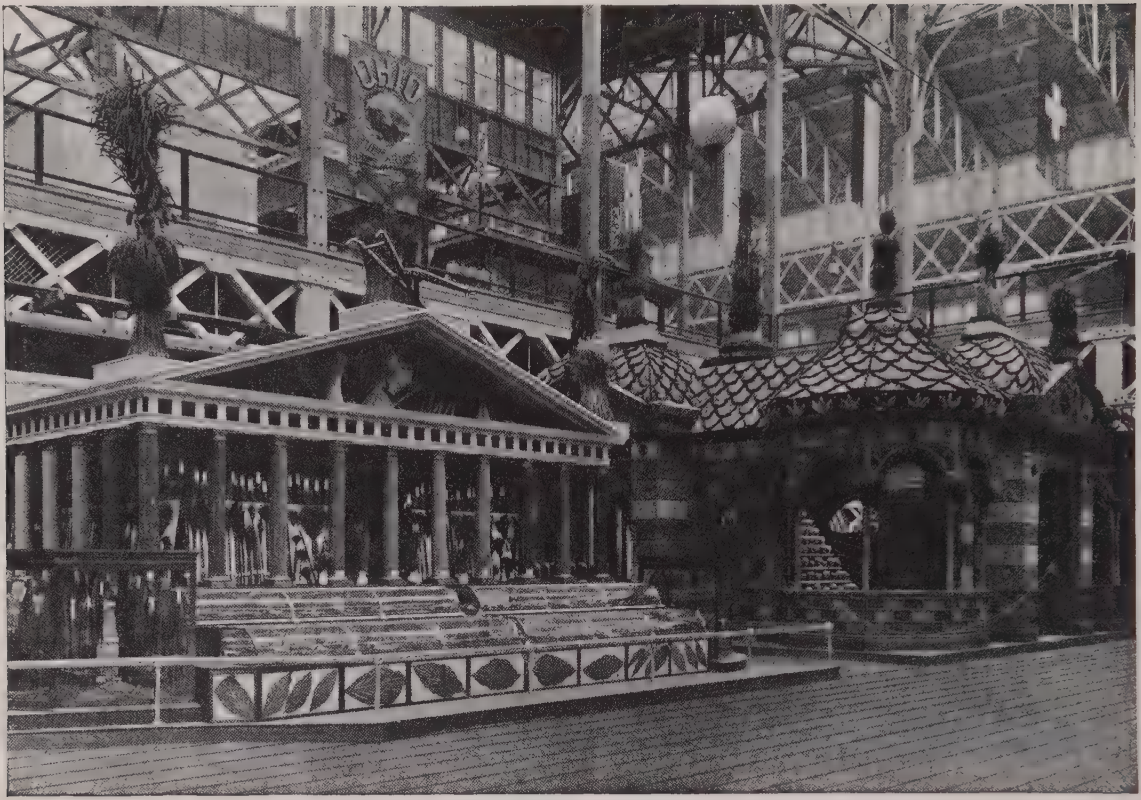
COAT OF ARMS, PENNSYLVANIA


GRAIN AND SEEDS, PENNSYLVANIA

In structural design the Ohio pavilion resembles somewhat a Roman temple. The glass columns which surround it are filled with cereals so arranged as to present a pleasing color effect; the cornice is also composed of glass compartments, through which the grains of Ohio are exhibited in all their variety and richness, and on the walls in various receptacles, or in the form of interior decorations, are 130 varieties of wheat, 128 of corn, 37 of oats, and 102 of grasses, with a creditable display of beans and tobacco. In the centre is an office with reception room, in which is a collection of standard works on agriculture.


ORNAMENTAL DESIGNS IN GRAIN AND SEEDS, PENNSYLVANIA

In Kentucky's pavilion leaf tobacco, corn, wheat, hemp, grasses, and blue-grass seed form the bulk of the exhibits, all of which are



OHIO AND ILLINOIS PAVILIONS

worked into structural forms or otherwise skilfully arranged. Of the three groups under which the collection is classified the largest consists of tobacco, of which there are more than a hundred exhibitors, the description known as Burley leaf being repeated in several score of specimens. Indiana, whose section lies east of the Kentuckian group, is liberally represented, as befits a state which ranks among the foremost in volume and quality of cereal products, displaying also many varieties of grasses, hay, and seeds.

SECTION ILLINOIS PAVILION

ENTRANCE, ILLINOIS PAVILION

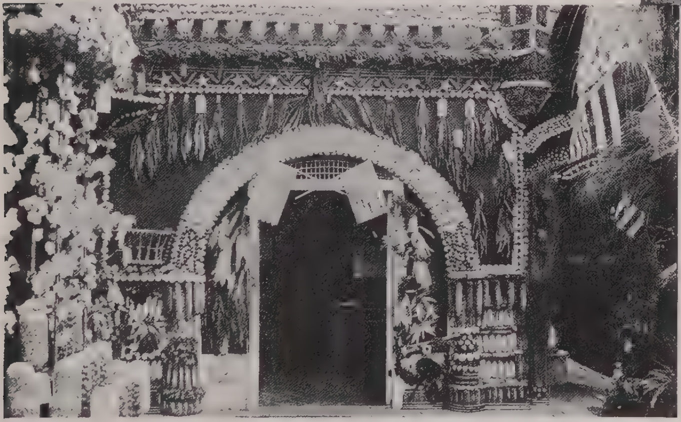
Indiana's exhibits are installed in a pavilion of white, the section fronting the façade being decorated with corn in the ear, and grain in the straw. Within there are three large structures, covered with jars filled with the cereals of the state, a shaft of corn, not unlike an Egyptian needle, rising above them all. In cases are other specimens of wheat and oats in the stalk, collected by the head of the agricultural experiment station, of Purdue university. An artistic

SECTION OF THE MISSOURI EXHIBIT

MISSOURI CEREALS

THE BRIDGE, MISSOURI PAVILION

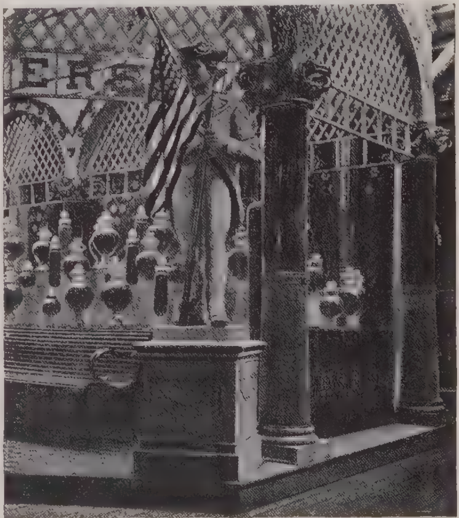
feature is a large wreath of artificial flowers on one of the cases, made by a woman from many varieties of grain and nuts, and containing also a grasshopper, bee, beetle, guinea egg, pinching bug, and the tusk of a hog. To the Indiana exhibit the weather bureau contributes several maps, showing the precipitation, temperature, and rainfall within the state for a period of twenty-two years, and elsewhere are maps presenting data as to altitudes, drainage, live-stock, and agricultural products.



ENTRANCE, MISSOURI PAVILION

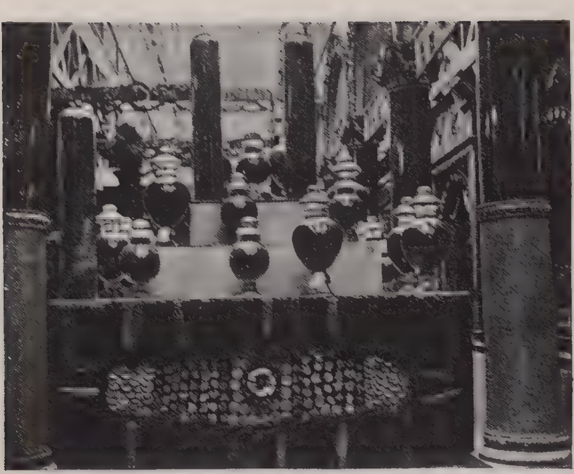
The home of the empire state, somewhat out of place, as it would seem, among the western and southern exhibits, is a plain, unpretentious structure, almost severe of aspect; but in the several groups and several hundred classes contained therein is one of the best and largest collections in Agricultural hall, arranged with skill and method, and displaying to excellent advantage her manifold products and resources. As in other sections, grain forms the bulk of the display; but of beans there are nearly 100 specimens, with grasses, leaf tobacco, hops, flax, and syrup made from the cane. The picking and preparation of hops, one of the most picturesque of out-door industries, are fully illustrated, and flax in its various forms, from the time it is harvested until made ready for the manufacturer, is also a feature in the New York collection.

ENTRANCE, NEW JERSEY PAVILION



CORNER OF NEW JERSEY PAVILION

North Carolina completes the group of states that fill the place of honor fronting on the central nave, which is thus divided among the middle, western, and southern sections of the country. In her glass pavilion, divided into convenient partitions, the first group consists of cereals, grasses, and grass seeds, in more than 350 classes. Then come sorghum, and sorghum and sugar-cane syrup and seed, of which there are some fifty exhibitors. A third group consists entirely of peanuts, and a fourth almost entirely of beans. In another



NEW JERSEY CEREALS

group cotton lint, seed, and bolls are repeated in two-score specimens, and among them is a little flax and flax-seed. Of hops and tea there are single exhibits, and of interest to scientific agriculturists are the samples of the soils best adapted to staple products.

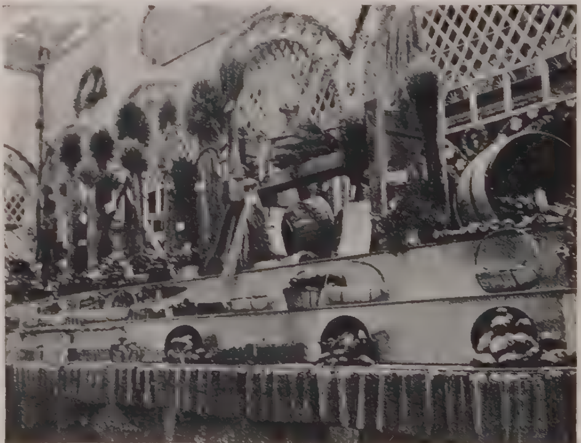
Near the eastern portal Missouri occupies one of the largest sections allotted to a state exhibit. An ornamental railing encloses the pavilion, which is in four compartments, and in the centre a pyramid, on whose sides are worked in grains and grasses the Missourian coat of arms, the seal of the United States, and a Columbian medallion. From this pyramid rises a shaft of grain, surmounted by a terrestrial globe of silk, with the state of Missouri in exaggerated scale. On either side of the arched doorway at the principal entrance is a case containing the choicer varieties of Missourian grasses, and grains, tobacco, flax, hemp, sorghum, and castor beans are elsewhere displayed in nearly 200 classes.

IN NEW JERSEY PAVILION

Around the stairway leading to the gallery which divides this section is a palace of corn, which serves as an office and reception room. Here is illustrated in the form of statistics and maps the growth of a leading branch of Missouri's industry, her corn crop reaching, and at times exceeding 200,000,000 bushels a year. All classes of cereals are also displayed in the shape of a terraced embankment, composed of jars of grain, and surmounted by an equestrian figure of Washington. A model of the great St Louis bridge, fashioned of sugar-cane and ornamented with grain, occupies another portion of the pavilion, in the construction and decoration of which there are samples enough to load a sea-going ship.

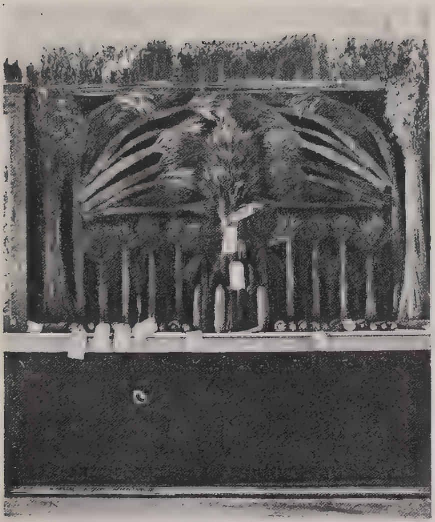
GRAIN ARBOR, NEW JERSEY

Except for Louisiana, the remaining exhibits of the southern states are grouped to the east of Missouri's pavilion. Here the two Virginias and Florida display their modest assortments in neat and tasteful pavilions, the Old Dominion giving the place of honor to tobacco with her wheat, corn, and oats in the background, while her western namesake reverses this arrangement. The state commission, the Louisiana Sugar exchange, and the New Orleans board of trade and Cotton exchange were mainly instrumental in organizing a series of exhibits which illustrate the methods of cultivating, harvesting, and milling rice; of producing sugar, molasses, and syrups, of raising cotton, and manufacturing cotton seed oil. They have also a large display of tobacco and cereals, together with specimens of soils which experiment and chemical analysis have shown to be best adapted to staple products.

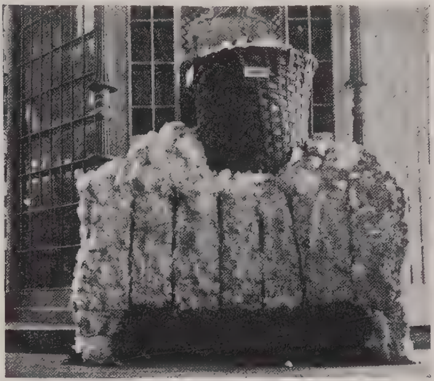


SOME NEW JERSEY EXHIBITS

In the exhibit of the Louisiana Sugar exchange are photographs representing plantation laborers, warehouses and other buildings for handling manufactured products, and scenes within the exchange itself. The state exhibit



CEREALS



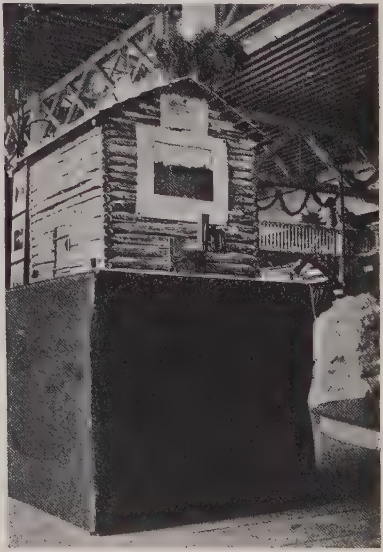
COTTON, NORTH CAROLINA

is divided into two main sections, designed to illustrate the development of the rice and the sugar industries. The so-called rice pavilion is thatched with the straw of that grain, resembling somewhat one of the Javanese houses on the Plaisance. It is surmounted by a marine monster in upright posture, with large eyes of bright colored glass. The pillars and walls of the sugar pavilion are of cane, both structures displaying the most artistic workmanship, and so arranged that they appear as one.

A portion of the Florida section is occupied by a Grecian pavilion, which serves as the official headquarters, tastefully furnished with exterior decorations of tropical plants, jute, sugar-cane, and other native products. Among the exhibits are samples of soil reclaimed from the coast lands and everglades, those of the produce of the soil consisting of specimens of sugar, rice, cider, wines, honey, preserved fruits, and early berries, the last including a jar of strawberries gathered in the month of February. The small but tasteful and well ordered collection of Maryland completes the southern display, except for an assortment of Texan wools contained in the gallery. North and east of the Maryland pavilion are those of New Jersey and Delaware, the contents of which are to be commended for quality rather than quantity. Especially neat and homelike is the display of New Jersey products, above which is inscribed the following legend: "The battle ground of the Revolution, on whose fields many of these exhibits were grown."

The New England participants are Massachusetts, Connecticut, New Hampshire, and Maine. Tobacco is a feature in the exhibits of the first two states, notwithstanding that in the former its cultivation has been strongly opposed by certain classes. The exhibit of Massachusetts is skilfully arranged, and includes photographic illustrations of many of her crops, with literature bearing upon agricultural topics. As an exposition of New England husbandry, which differs widely from western methods, a considerable space is devoted to what is termed intensive farming, Here, also, is shown how to check the ravages of the gypsy moths, and other insect plagues. Within a glass case is a tree covered, and partially destroyed by the worms, with birds perched on the trunk, and barnyard fowls at the base in the act of devouring them. New Hampshire has an attractive display, in a small red building enclosed with a rustic fence, and representing the typical New England granary, near which are tables covered with jars of grain. In the yard are benches and easy chairs, an old-fashioned flax-wheel, plough, and other agricultural implements of colonial times. On either side of the door are compartments

NORTH CAROLINA COTTON

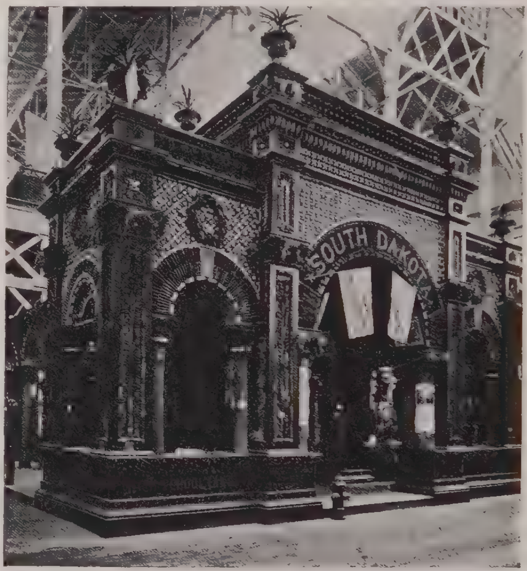


IMPROVED TOBACCO CURING BARN

OKLAHOMA

EXHIBIT OF SPICES

in which are specimens of the sugars and syrups for which the state is noted.

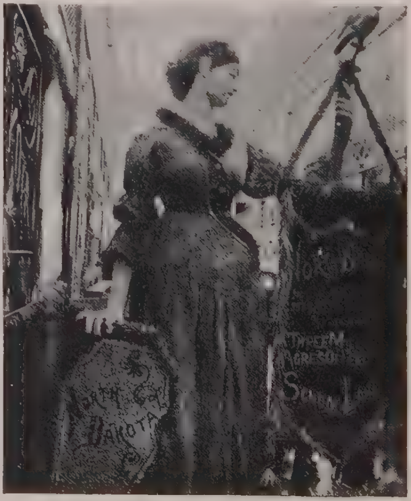


SOUTH DAKOTA'S PAVILION

Across the passageway from the New Hampshire building is a pavilion bedecked with the brightest of the primary colors, that of Oklahoma, recently re-christened by its territorial legislature, the Mistletoe state, for this plant is found there in great abundance. As shown by the exhibits, its soil yields wheat, cotton, clover, maize, sorghum, timothy, oats, rye, barley, flax, and kaffir and broom corn. Considering that this territory is little more than four years old, her display is most creditable, and one that augurs well for her future.

Surrounded by the Pacific coast exhibits is the pavilion of South Dakota, the main entrance of which is in the form of a large triumphal arch, with a doorway on either side. The pillars, arch, doorways, and the supports of the section walls consist of the trunks of trees which were cut in March, 1893, many of them bearing twigs in full leaf. Wheat and grasses comprise the bulk of the exhibit, among the latter being specimens of the switch variety more than thirty feet long. Separated from this section by the California pavilion are those of North Dakota and Kansas, the former containing a profuse display of cereals, both in decorative and exhibitory forms. Above her pavilion is a woman of heroic stature, her right hand resting on a shield, and holding in her left a banner, the entire composition fashioned in grain, as are other elaborate designs. In the Kansas structure, rich in its golden hues, is proclaimed her rank as among the foremost of corn-producing states, the figures above the principal entrance indicating the year of her admission to statehood, and that in which was dedicated the World's Columbian Exposition.

SOUTH DAKOTA GRAINS



DEVICES IN GRAIN AND GRASS, NORTH DAKOTA

Of the Pacific states, grouped almost in the centre of the American division, some are well represented in the Agricultural department, while others have but a slender display. First may be mentioned that of California, as the largest grain producing state in the group, one that in 1850 imported

CALIFORNIA GRAINS

CALIFORNIA WHEAT

almost her entire supply of cereals, and now ranks among the leading sections of the republic in yield and export of wheat. In occasional years California has led all the rest in volume of production, and is among the few whose crop for a single season has exceeded 60,000,000 bushels. Of maize, a few million bushels a year are raised, and of barley, mainly for horse feed and brewing purposes, from 15,000,000 to 20,000,000 bushels, with a moderate export demand.

But cereal farming, and especially wheat farming, is no longer a profitable industry in California, unless conducted on a large scale, and with improved appliances. For this the reasons are not far to seek, with wheat selling, as in recent years, at from 70 to 80 cents a bushel, with labor at $2 a day in the harvest season, and often not to be had at that. Then there are excessive freight charges, with delay and difficulty in moving crops, large quantities of wheat remaining unhoused by the side of railroad tracks, where at times it becomes spoiled while awaiting transportation. No wonder that the smaller class of grain-growers cannot compete with those of Russia and Hindostan, where freights are almost nominal, and wages from a fourth to a tenth of California rates. But on the larger farms, some of them with many thousands of acres planted in wheat, the use of steam power in ploughing, planting, and harvesting has so diminished the cost of production, that in favorable locations wheat can be raised and placed at tide-water for less than thirty cents a bushel.

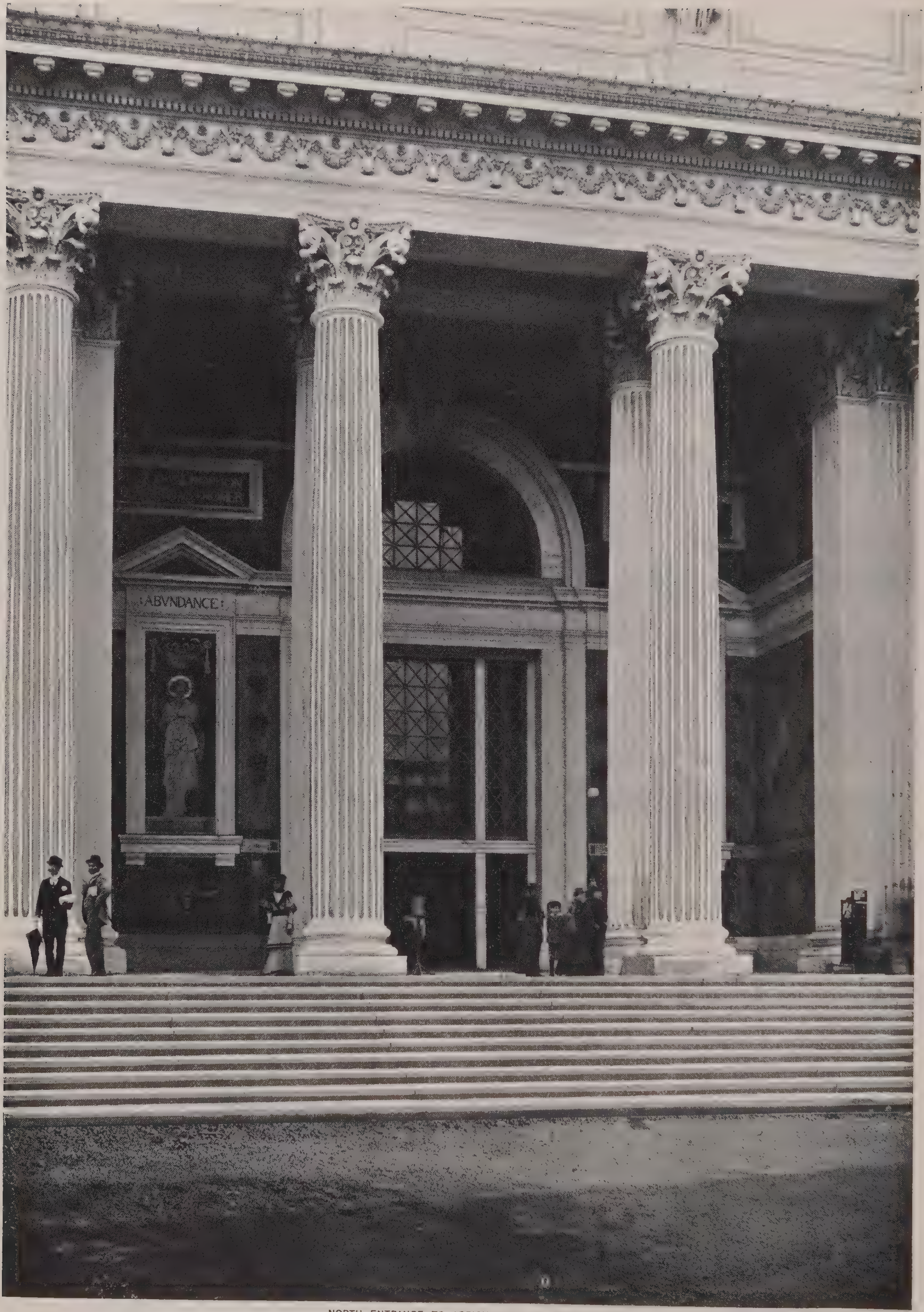
Of hay the California crop is from 1,500,000 to 2,000,000 tons, largely of alfalfa, as there is named the lucerne of the eastern states. With the aid of labor-saving appliances this can be raised at a cost of $1 a ton, inclusive of cutting, curing, and stacking, while on irrigated lands three or four crops a year, each of as many tons to the acre, are no uncommon yield. Vegetables are largely raised, and especially beans and potatoes, the average yield of the former exceeding 50,000 tons, mainly of the Lima variety, while of the latter and of winter vegetables many thousands of tons are shipped to eastern markets. Of sugar-beets the product is from 10,000 to 15,000 tons a year, with three beet-sugar mills in operation, one of them the largest in the United States. All these and other industries are represented in the Agricultural department, and what has been said in this connection applies in a measure to other sections of the Pacific slope.

In comparison with the display in her state pavilion, the one contained in the Agricultural building is almost insignificant. And yet there are in this collection more than 70 exhibits of cereal crops, with 50 or more of beans, potatoes, and other vegetables, and several each of hay, grasses, and grain in the straw, and of olive oils, while of silk cocoons, and cotton on the stalk there are also single exhibits. Though not an imposing display, all the leading agricultural districts of the state, and nearly all their products, are represented in these California groups, and among them are the usual specimens of phenomenal growth, including melons, pumpkins, and beets, with potatoes one of which would almost suffice for a family dinner.

The booth itself is a plain unpretentious structure of glass and wood-work painted in light colors, and with little attempt at ornamentation.

CALIFORNIA CEREALS

CALIFORNIA CORN



NORTH ENTRANCE TO AGRICULTURAL BUILDING

In the centre is a wigwam of unique design, constructed of Indian corn, and elsewhere are bouquets deftly fashioned of native grasses. The exhibits are neatly arranged, and show to the best advantage their several classified groups. But in other departments of the Fair, especially in the Mining and Horticultural sections, and above all in her own home among the state pavilions, California is seen to better advantage. Her display of fruit, for instance, is by far the best on exposition, representing one of her largest and most progressive industries, one that with cheaper freights is capable of almost unlimited expansion; for to the consumption of fruit in crowded eastern centres there are no practical bounds, if it can be hauled to market at rates that will leave a fair profit to the producer, while placing it within reach of the great army of wage-earners. All this will come in time; and as the golden age of pastoral days was succeeded by the age of gold, as mining gave place to agriculture and stock-raising, so are these latter yielding the precedence to fruit-growing, which promises erelong to lead all other industries, as even to-day it does in the southern portion of the state.

NEVADA'S EXHIBIT

Next to California, Oregon ranks first among the wheat producing sections of the Pacific coast; for ever since the days when were sown on methodist mission lands the first wheat planted in the Pacific Northwest, grain growing has there been a favorite pursuit. In her pavilion, which for reasons best known to the management was sandwiched between those of the southern and middle states, is a large collection of cereals, vegetables, grasses, and forage plants, fairly representing this stable and industrious community, one of the most steadily prosperous in the United States.

Of similar character are the exhibits from Washington, whose production of wheat has increased nearly four-fold during the decade ending with 1892, while for the same period Oregon shows but a slender gain, and California a decrease in yield. Of sheaf grain there are countless specimens, including cereals of all descriptions, and of threshed grain there are many varieties in display and decorative forms. Among them is wheat that has yielded nearly 100 bushels to the acre, and oats that have produced even more abundantly, with timothy hay nearly nine feet high, with vegetables of wonderful size, a complete assortment of field and garden seeds, and flax in all its stages of growth. Farm buildings and incidents are reproduced in photographic illustrations, and there is a chart containing farm and crop statistics, while climatic conditions are represented as taken from government reports. Few of the Pacific or other states have displayed such interest in the Fair as this, one of the youngest of the sisterhood, two of her citizens taking on themselves the task of preparing an exhaustive exhibit from the counties in which they resided, while a third erected at his own expense, and stocked with grains and fruits, a pavilion in the Washington section.

Nevada, it need hardly be said, is not an agricultural region, though gaining steadily in this as in other branches of industry, now that she has fairly recovered from the depression caused by the faded glories of the Comstock. Except on irrigated lands, cereals can only be raised to advantage in a few locations, as in portions of Elko county, where 30 bushels of wheat to the acre or 50 of barley are no uncommon yield. The exhibits consists mainly of grains and grasses, arranged in frames, and housed in a neat and tasteful pavilion.

Utah's exhibit is well worthy of the community which, during its exodus from Nauvoo, halted midway on its journey to plant and gather grain, near the spot where now stand the cities of Council Bluffs and Omaha. Nowhere in the United States, and probably nowhere in the world have irrigation systems been developed with more economic method or with better results. When in 1846 the Mormons entered their western Zion, their land of Deseret, the first task to which they applied themselves was the construction of irrigating ditches. Twenty years later, when elsewhere on the Pacific coast artificial watering was almost unknown, nearly 300 canals had been built, with a total length of more than 1,000 miles, and conveying the mountain streams and melted snow to 170,000 acres. By 1892 the various systems had been so enlarged as to absorb nearly all the available water, the supply of which formed the only limit to further enterprises. Thus it is that several million bushels a year of cereals are raised on the arid soil of Utah, almost entirely by Mormon farmers; for the saints are essentially a farming community, leaving to their gentile friends the control of commerce and mining.

BOTTLED BEER FROM DENVER

On a sign attached to the Utah pavilion, which lies west of the Washington section, it is announced that everything contained therein was produced by irrigation. A large relief map represents the Malade valley system, with the waters of the Bear river canal and its branches, giving fertility to 150,000 acres of land. In the centre of the booth is the national flag, fashioned of lambs' wool blanketings. A pile of salt made from the waters of the great lake is walled in with bags of salt ready for use or export, and in a series of photographs are shown the natural gas wells in the neighborhood of Salt Lake City. Here also are displayed the nutritious grasses of the territory, with samples of its soil, and its clear unfiltered river water, while of cereals there are many samples, with a few of vegetables and vegetable seeds.

South of the Utah section are the exhibits of Idaho and Colorado, the former including the usual cereal collection, with some remarkable samples, as corn-stalks more than twice the height of a man, and on which are several cobs. In addition to grasses and hay, with vegetables and seeds, of many descriptions, there are specimens such as in former years it was declared impossible to grow on Idaho soil, among them leaf tobacco, flax, and Swedish turnips; but in truth there are few agricultural products that cannot here be raised on irrigated lands.

In the Colorado section is sufficient evidence that she is no longer, as some imagine, merely a mining and stock-raising region. Except for California, her area of land under artificial watering is larger than in any of the Rocky Mountain or the Pacific states, more than 2,000 ditches and canals, with several hundred reservoirs, giving fertility to 3,000,000 or 4,000,000 acres of land. Thus it is that instead of importing as in earlier days the bulk of her food supply, Colorado raises from 15,000,000 to 20,000,000 bushels a year of cereals, with 80,000 to 100,000 tons of hay, and of vegetables and dairy products more than suffices for home consumption.

POULTRY EXHIBIT

On the frieze of the pavilion are depicted scenes representing the agricultural development of Colorado, and within, her irrigation system finds expression in a model of one of her irrigated valleys. In this structure no wood-work is visible, the entablature resting on arches covered with native grasses, and these on columns wrapped with grain. Among these groups is every variety of grain, threshed and in the sheaf, including some 400 specimens of wheat, 100 of oats, and 70 of barley and rye. There are samples of wheat which has yielded more than 50 bushels; of oats that have produced 130; and of barley, 80 bushels to the acre; but these are of course exceptional returns. In the centre of the display are shown the comparative quantities of grain raised on Colorado soil between 1874 and 1892. Of buckwheat, millet, and broom and Egyptian corn, there are a few samples; of flax a special group; and from Kiowa county, sorghum and sugar-cane.

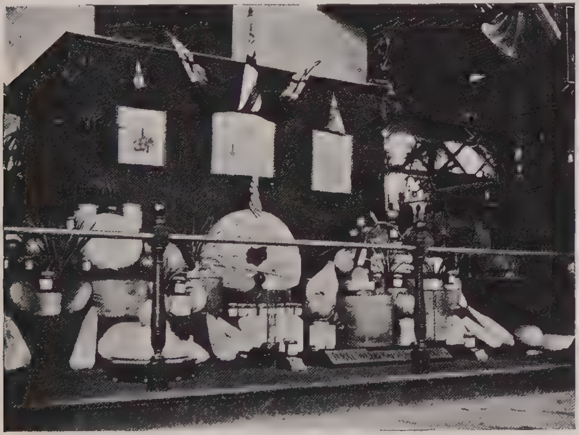
Of native grasses and forage plants there are more than 100 varieties, a much larger number than was displayed at the Denver exposition of 1884. These are contained in the exhibits of the Colorado Agricultural college and the state commission, and show to excellent advantage the rich pastoral resources of the silver state. Among them are the grama and bunch and buffalo grasses which form the mainstay of sheep and cattle ranges. The cultivated species include sheaves of alfalfa, four to six feet high, bunches of clover two feet in height, and timothy hay with heads two inches long. Finally there is a collection of all the field and garden seeds of economic value.

Wyoming and New Mexico occupy small spaces in Agricultural hall, the former to the east, and the latter to the south of the California section. In both, the production of cereals and fruits is rapidly gaining ground under the stimulus of irrigation, and especially in Wyoming, this, the youngest of all the states, now ranking third in area of irrigated land, and second in mileage of irrigating canals. Her exhibit includes grains arranged in glass tubes, with native and cultivated grasses, hay, and vegetables, all produced, as is stated, by artificial watering. The New Mexican group consists entirely of grains, and especially wheat, of which there are nearly 500 samples.

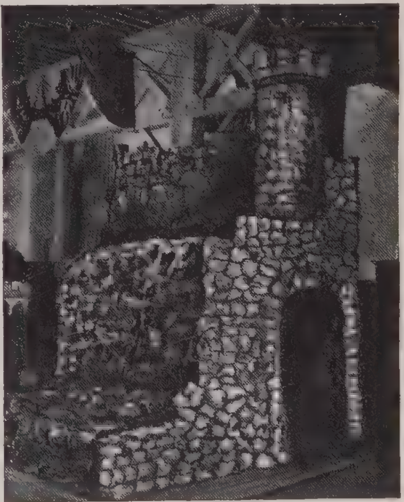
West of the New Mexican section is Montana's handsome pavilion, one of the most tasteful structures in Agricultural hall, and containing in its 200 or more exhibits an exhaustive representation of her products and resources. Within is a pagoda fashioned of native grasses, and on a semicircular screen are presented the agricultural records of the state. As in other groups, cereals form the bulk of the specimens; but vegetables are also in good supply, with feed and fodder of many varieties, as blue-joint, blue-stem, bunch, and other grasses, clover of several descriptions, alfalfa, timothy, and red-top hay, and whatsoever else of grasses and hays is grown on Montana soil, its native herbage constituting a primary source of wealth. Though Montana is not an agricultural region, there are many sections well adapted to grain and other farming, with an average crop for 1892 of 33 bushels of wheat to the acre, 35 of barley, and 40 of oats, while on irrigated lands the average for all grain crops is nearly 42 bushels, and of vegetables 240 to the acre. Already there are some 250,000 acres of irrigated land in actual cultivation, and with the high prices of farm products, far above those of most of the Pacific states, Montana must cease to import, as now she does, a large proportion of her food supply.

CHEMICAL LABORATORY

Such are the agricultural products and resources of the Pacific slope, as represented at the Columbian Exposition, and here described somewhat at length as compared with other sections of the republic. As to the latter, most of my readers are doubtless well informed; but to many the choice and varied display of certain of the Pacific states will be almost in the nature of a revelation. In 1850 the cereal crop of the entire western coast could have been placed on board a single sea-going ship; in 1892 several hundred grain-laden vessels carried her surplus wheat and flour to a score of foreign ports. Yet in this region, covering nearly one-third of the total area of the United States, there is infinite room for further development.


ENGLISH CHEESE AND HAMS

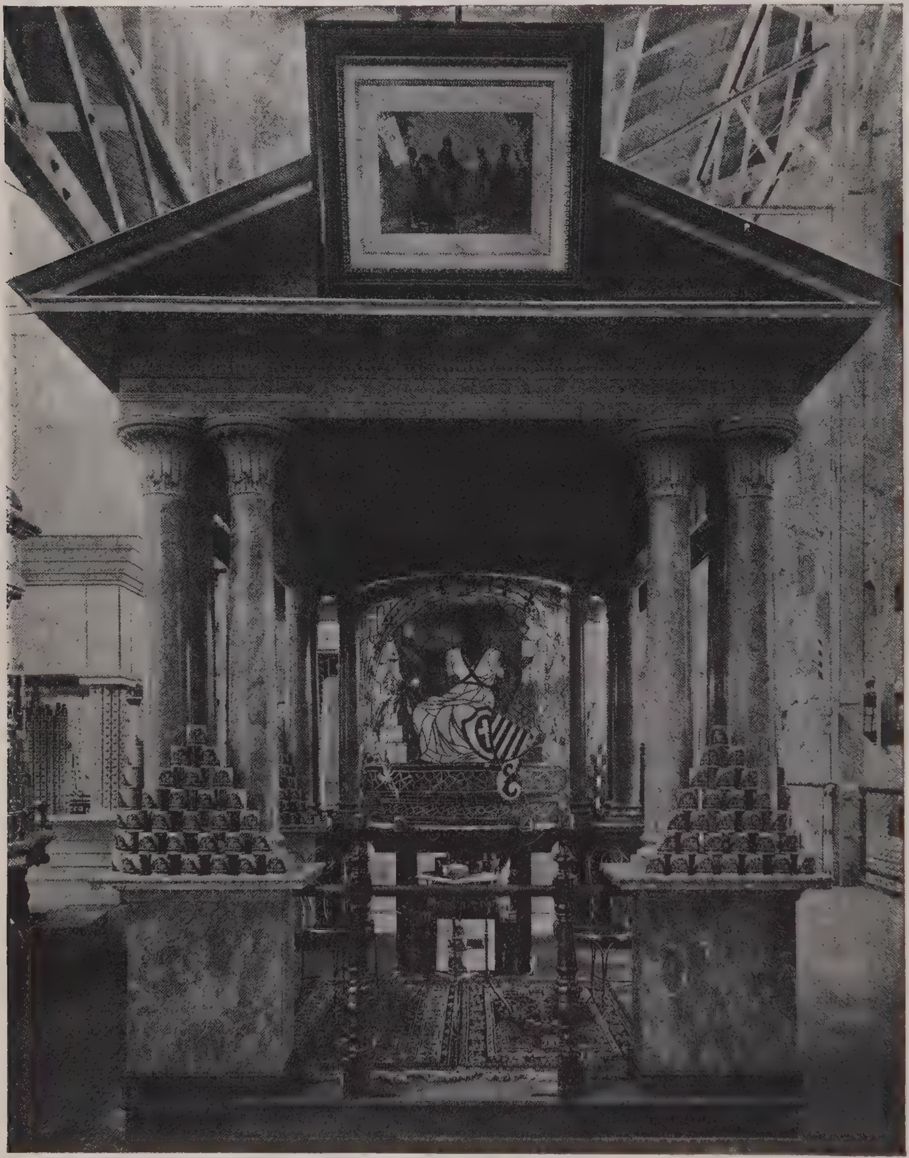
In the south-western corner of Agricultural hall is the collective exhibit of agricultural colleges and experiment stations connected with or under the supervision of the government. Grouped along the outer walls of this section are specimens of plant life, models illustrating the development of the plough, articles contributed by women associated with the domestic and industrial departments, and various instruments used in ascertaining the properties of soil. Within are exhibits from manual training schools, and apparatus contributed by the laboratories. In the latter are ascertained many valuable facts relating to insects and parasites injurious to grains, fruits, and live-stock, with other matters that concern the agriculturist. Beyond are exhibits of grains and vegetables from various stations, some blighted, and others in a healthy condition.


BOVRIL BEEF EXHIBIT

One of the most practical results of the experiments conducted by this branch of the agricultural department, is that which shows the effect of feeding to live-stock different proportions of food elements. In a series of glass boxes are various grains, with layers of protein, carbohydrates, and fats, and beneath them are stated the several quantities required to produce ten pounds of additional weight in cattle, sheep, and swine. Experiments have also been made to ascertain what results would follow as to the production of fat or flesh, and beneath the vessels which show the proportion of food elements that entered into these constituents are represented sections of their bodies, with the distribution of fat and lean.

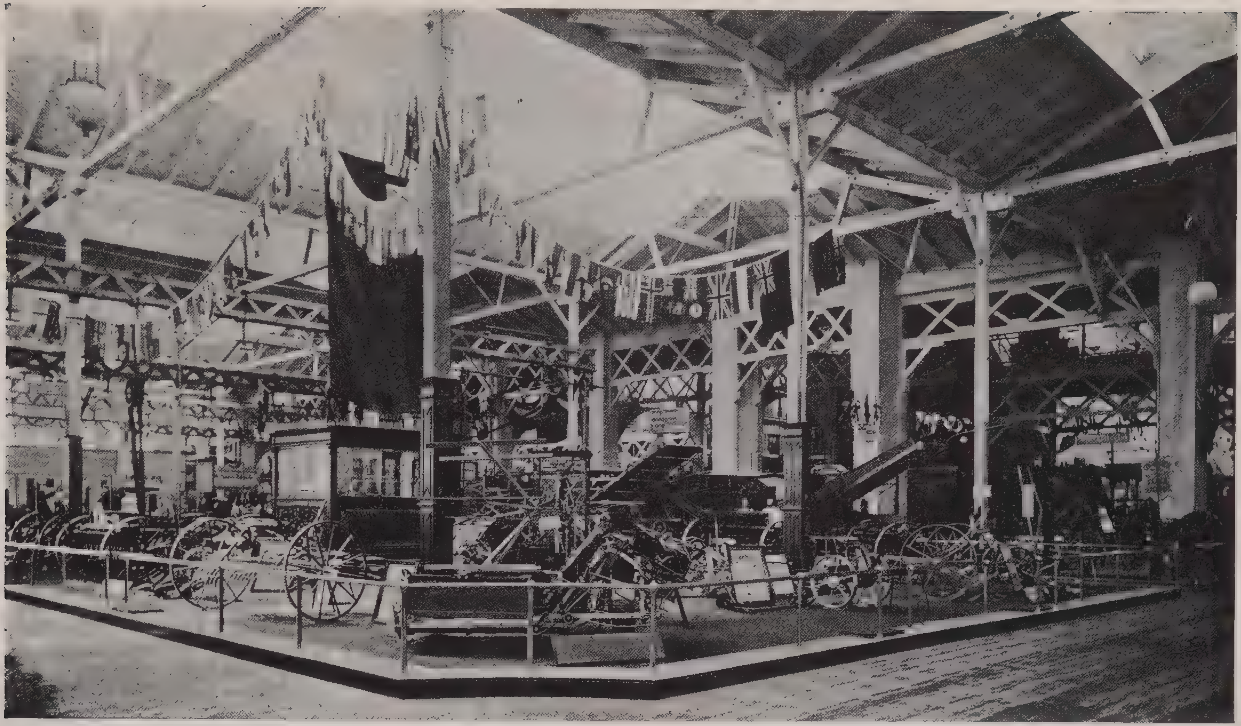
All the states have contributed to this collective exhibit, the Massachusetts college showing a collection of soils taken from different sections, accompanied by statements regarding chemical and mechanical analyses. The veterinary department of this college sends a model of a horse displaying its anatomy, and among the exhibits of the entomological section is the gypsy moth, with a story of its life, habits, and devastations. Plaster of paris specimens of Indian corn, parsnips, carrots, apples, pears, and potatoes occupy another case, samples being shown both of cultivated and wild varieties. In addition to these are charts with 3,000 figures, illustrating the systematic study of botany, and some ingenious apparatus for ascertaining the pressure exerted by the flow of sap through trees. Near the exhibits of experiment stations is a large array of mounted Indian fowls, contributed by the New York branch, and illustrating various methods of feeding and of treatment.

The entire display is neatly and systematically arranged, glass-covered cabinets, cases, and jars containing, not only farm products, but every form of life that pertains to farming in all its phases, including the care and breeding of live-stock. Here also is illustrated the botany of the farm, showing the seeds and plants best adapted to various locations, and when and where to place them, with many varieties of vegetables serving as food for man or beast. In the entomological section are cases of many-hued insects, some of them harmless, and others destructive to crops. Finally, it may be said that in this collective exhibit, almost hidden from view by the surrounding pavilions, is one of the most attractive features of the Agricultural department, one in which the colleges have given emphasis to the government display. The object of the former is to afford a scientific training, both practical and theoretical, in connection with the varied industries of the farm, to train their pupils in the elements of art, and to make of them useful citizens, whose hands are the ready instruments of thoughtful and cultured minds.


A GALLERY PAVILION

In cereal and other raw products Great Britain is somewhat feebly represented in her 12,000 feet of space in the Agricultural building, her exhibits comparing unfavorably with those of Canada, which ships to the mother country a large proportion of her wheat surplus. In England the acreage planted in grain, and especially in wheat, is steadily diminishing, the decrease in the latter exceeding 25 per cent for the decade ending with 1892. For that year the entire area in wheat was only 2,300,000 acres, or less than was planted in the single state of Indiana. In many of the American states the acreage and yield in cereals is larger than in the British isles, where little more than 9,000,000 acres are actually under cultivation, but with a larger proportionate surface devoted to hay and root crops. In average returns, however, the comparison is largely in favor of the latter, where of wheat the normal yield is 30 bushels, of barley 33, and of oats 40 bushels to the acre. These results are due largely to the more thorough and systematic farming, rendered necessary by the smaller size of holdings, which for the United Kingdom averages less than 50 acres, only a few hundred among the 1,500,000 landlords and farmers owning or renting more than 1,000 acres. Other causes are the rotation of crops, the fallowing of land for two or three years in succession, and the general use of fertilizers, of which more than 1,000,000 tons, nearly half of it imported at an annual cost of $6,000,000 or $7,000,000, aid in maintaining the fertility of the soil.

But with all his care and economy, the British grain-grower finds it no easy task to earn for himself a livelihood, so that many are turning their attention to root crops as yielding better returns, when taken in connection with stock-raising. In addition to hay, mangel-wurzel, turnips, and even cabbages are raised for winter feed, these being protected from frost, and mixed with dry fodder when distributed among the cattle sheds. Dairy farming is another prominent industry, and especially cheese-making, Stilton, Cheshire, and other



CANADIAN EXHIBIT

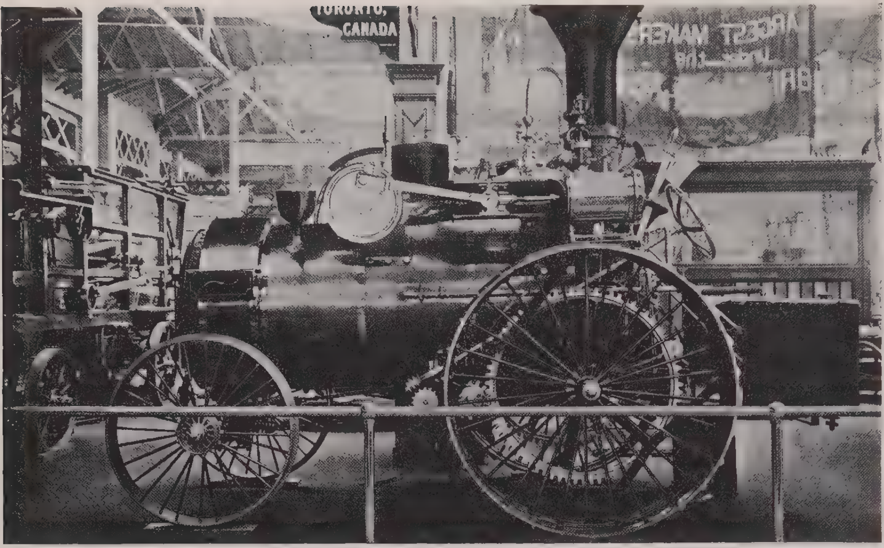
favorite kinds always holding their own in the market. Nevertheless Great Britain imports from Holland and elsewhere cheese to the annual value of $30,000,000, butter and margarine that cost her nearly thrice that sum, while of the total consumption of milk, and that which is made of milk, requiring nearly 3,000,000,000 gallons a year, little more than one-half is produced at home. Hop-raising is a favorite, and in good seasons a profitable pursuit, especially in the southern counties, the yield for 1892 exceeding 46,000,000 pounds; for the British are a beer-drinking people, consuming more than 30 gallons a year per capita of population. Add to this market-gardening and fruit-growing, both showing a steady gain in acreage and production, and it will be seen that there are branches of remunerative farming still open to the British husbandman.

But while the outlook is not so dark as some would have us believe, it is nevertheless sufficiently gloomy; nor are the causes far to seek for this condition of affairs. First and chiefest among them are low prices, especially for grain, caused by over-production in the United States and India; these, with free trade, excessive taxation, complicated land laws, and the heavy toll demanded by railroads and middlemen, laying on the farmer a burden greater than he can bear. Thus it is that rents have gradually been reduced from twenty to fifty per cent, and in some localities, especially in Ireland, have almost reached the vanishing point, while there are large agricultural areas whose value has sunk to a level with that of the prairie lands of Iowa and Illinois. Though many remedies have been suggested, such as protection, bi-metallism, and the creation of peasant holdings, it is doubtful whether any or all of them would go far to mitigate an evil due almost entirely to low prices, one that can only be righted by increased consumption or diminished production.

From the agricultural experiment grounds of a Lancashire exhibitor are displayed samples of ears and grain, as the result of operations, extending over thirteen years, for improving, by careful selection and fertilization, the cereals of all the principal grain-growing countries in the world. Add to these a few specimens of wheat and oats from a Kentish farmer, one of them showing 76 ears, and some 4,500 grains as the product of a single kernel, and apart from a couple of oatmeal exhibits from Drogheda, Ireland, we include about all that England has to show us in the way of cereals. Dairy products are represented

HAPPY FAMILY, CANADA

CANADIAN GRAIN



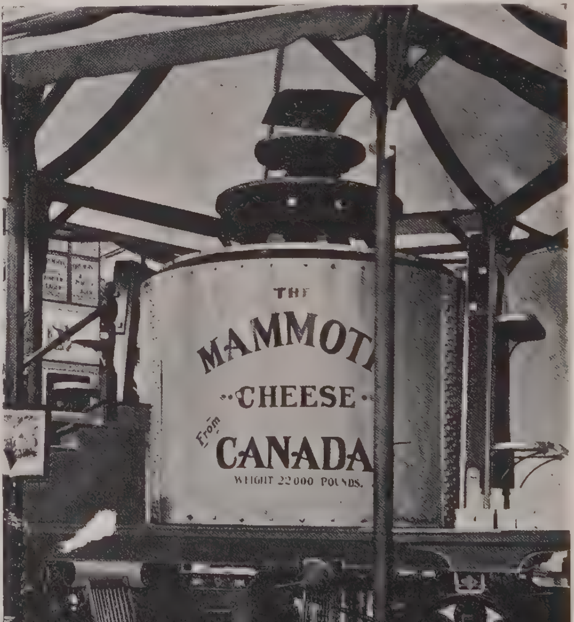
TRACTION ENGINE, CANADA

by a single exhibit, and dairy appliances by a collection of churns, and other apparatus, the latter from the London and Provincial Dairy company. Of animal and vegetable fibres there is also but one collection, and that from an Irish company whose headquarters are at Belfast. Among fertilizers and fertilizing compounds are included nearly all the varieties used in Great Britain, as guano, ground bones, phosphates, sulphates, and other chemical preparations. Near them is an exhibit of eucalyptus oils and eucalyptus soap, the former in a dozen varieties as manufactured from various species of the gum-tree by a company whose works are in the Australian colony of Queensland.

Food preparations are better represented, as also are mineral waters, temperance beverages, and malt and spirituous liquors. From the British Bee-keepers' association comes an exhibit of 1,000 pounds of extracted honey, contributed by 100 apiarists, with books, pamphlets, and diagrams used by the society's lecturers and experts. By a coöperative organization are displayed samples of English, Scotch, and Irish honeys, with beeswax in various forms. In the same group is an exhibit of Queensland cane sugar, now largely produced in that country by Kanaka labor. Of tea, coffee, cocoa, and chocolate there are many varieties, and among the first is one from the Sylhet tea gardens in London, showing the plant in every stage of growth, as raised in that district of the Indian province of Assam. Preserved meats, soups, fish, fruits, and vegetables are in liberal supply, with combinations and concentrations for which special virtues are claimed, as those of the Bovril company, prepared from essences of beef, its exhibits housed in the most picturesque of booths, with office representing a fortress enthroned on a steep and rugged cliff. Of mineral waters there is a large array, and with them are many other drinks for the total abstainer, including such non-alcoholic preparations as hop bitters, fruit cordials, and orange champagne.

Except for a few samples of London gin and compounded spirits, whatever these latter may be, the samples of alcoholic liquors are limited to Scotch and Irish whiskeys, the former including the finest of Highland brands, and the latter the famous poteen which, in its purity, is one of the best of whiskeys, though for every gallon of the real article a hundred are sold under its name. Among these exhibits is a round tower, forty feet high, and constructed entirely of whiskeys in wood and bottle from a Dublin distillery. Allsopp's, Tennent's, and other favorite varieties of ale, porter, and stout are classed in a separate group. Of tobacco, an interesting display is that of the British North Borneo company, including leaf for wrappers, and cigars made entirely or in part from the products of its plantations. A similar exhibit is that of a company whose estates are in Sumatra, and a Birmingham company shows its appliances for rolling the leaf into coils or plugs, and for the making of cigarettes.

But the most attractive exhibit in the British section is a model of the Brookfield stud farm, at the foot of the Highgate hills, within a few miles of the most densely thronged of London's business centres. The stud is the property of W. Burdett-Coutts, whose "unearned increment" of wealth, with the influence that wealth commands, won him a seat as member of parliament for Westminster. Its purpose is to preserve and improve the old English breeds of coach-horses, hackneys, cobs, and ponies, some of which were in danger of becoming extinct. In the model are reproduced with remarkable fidelity of detail, all portions of the farm and stud, from the cottage of the groom, and the office where clerical work is done, to the covered yard, the clean well ventilated stables and loose boxes, the harness room, the riding-school, the granary and barn, and the show-ground with its wide expanse of turf.

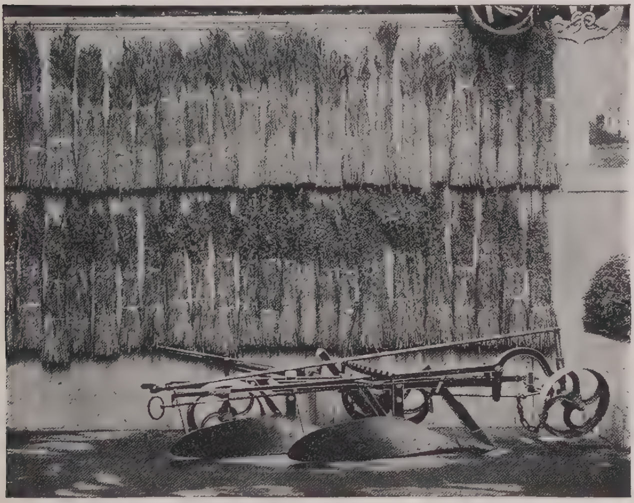


THE LARGEST CHEESE IN THE WORLD

There is also a collection of oil paintings by prominent artists, including those of the sire of Brookfield, and other famous hackneys.

ENTRANCE, NEW SOUTH WALES PAVILION

East of the British section are the more compact exhibits of Canada, contained in three pavilions, one of them displaying the cereal, root, and other products of the government's experimental farm at Ottawa. There are also minor pavilions erected by the officials of the agricultural colleges of Ontario and Quebec, the latter structure in two portions, made of tobacco and grain. Near the enclosure which surrounds the government pavilions is a heterogeneous collection of articles, among them flour, starch, maple syrup, mineral waters, malt extracts, beers, and ales. Of cheeses, the making of which is a prominent Canadian industry, there is a sufficient display, and one of the chief attractions in this section is a monster cheese, encased in an iron tank, and mounted on a platform approached by a flight of stairs. On an inscription attached to the stand we are informed that it weighs 22,000 pounds, and that to supply the materials more than 1,600 maids milked 27,000 gallons from 10,000 cows. Manitoba, British Columbia, and the northwest provinces are all represented in the Canadian division, where are also mounted specimens of the white and black bear, of deer, goats, antelope, wild geese, and turkeys, with other illustrations of Canadian fauna. In the annex is a collection of Canadian agricultural machinery, and as neither Great Britain nor any other of her dependencies have any exhibits of the kind, it represents the contribution of the entire empire in this department. The largest display is from a Toronto company, and includes binders, threshers, cultivators, mowers, and a Manitoba straw-burning engine. The last is used by agriculturists in regions where wood is scarce, and is fitted with a tubular boiler of peculiar construction, whereby a forced draft may be obtained. The cog-wheels are of aluminum, and connected with the thresher, which is supplied with an ingenious device for measuring the amount of grain that passes through it. The company's office is panelled with fifteen varieties of Canadian woods, such as are used in the construction of its machines, and included in its collection are the medals awarded at former expositions. In all some thirty firms have samples of agricultural implements, and among them are a few special apparatus, as pea harvesters and sap evaporators; but as for the most part one agricultural machine is very like another, when used for similar purposes, it is unnecessary here to describe them in detail.



NEW SOUTH WALES CEREALS

A feature in the Agricultural building, and one that has never been seen before, except at such local expositions as were held in Sydney and Melbourne, is an exhibit of the agricultural products of the Australian colonies, and especially from the oldest of her colonies, that of New South Wales. It is now some three centuries since a French navigator, landing on the western shore of the continent, found there, as he relates, a boundless expanse of forest primeval, with no signs of life nor anything that would support it, save for a few human and marsupial bipeds, the former so degraded that he hesitated whether or not to class them among the brute creation. But on this continent, with an area about equal to that of the United States, there is now a larger white population than on the entire

CANNED GOODS, NEW SOUTH WALES

GRASSES AND FAT TAIL SHEEP, CAPE COLONY

Pacific coast, a contented and in the main a prosperous community, one that has built at least two cities larger than the Pacific coast metropolis, with many of smaller size. Among its sheep-farmers and stock-raisers are not a few who count their herds by tens of thousands, and their flocks by hundreds of thousands, the wool-clip of a single station, as the Australian terms his rancho, sufficing to load a clipper ship.

While not an agricultural country, in the proper sense of the word, Australia is more than self-supporting, producing of certain staples a much larger surplus for foreign markets than offsets the importation of others. Though wheat thrives badly on its thin, arid soil, an average crop represents a value of $30,000,000, and yet the average yield does not exceed seven or eight bushels to the acre. Of other cereals the product is worth some $25,000,000; of hay an equal amount; of root crops $20,000,000; of vineyards, orchards, and market gardens, $22,000,000, and of cane-sugar, $10,000,000, the last produced only in Queensland and New South Wales. Of wool the clip from 125,000,000 sheep, more than twice the number contained in the United States, was valued in 1892 at nearly $20,000,000, and of canned and frozen meats there is a considerable and steadily increasing export. In the latter department the colonies are encroaching somewhat on the American trade, for beef and mutton are worth less than half the prices paid for them in the eastern states. Such is the industrial condition of Australia, a country yet in its infancy, with a population of less than two to the square mile, but with resources which, until recent years, were not appreciated even by the Australians themselves.

ANGORA GOAT AND SKINS, CAPE COLONY

Notwithstanding a serious depreciation in the price of wool, with little prospect of improvement so long as sheep continue to increase in two-fold ratio as compared with the human race, sheep-farming continues to be, as it ever has been, the greatest of Australian industries. And especially is this true of New South Wales, whose exports of wool for 1891 amounted to 332,000,000 pounds, valued at $56,000,000. As to the quality of this wool we have a complete illustration in the exhibits of the Australian section, forming the largest collection of the kind in Agricultural hall. In this collection there are no less than 400 bales, representing many varieties, from the soft merino fleece, prized for its purity and texture, to the coarser grades valued for quantity rather than quality of clip. At the entrance to one of the apartments is an arch constructed of solid bales of wool, and within or abutting on the aisles are pillars and pyramids of similar construction, with bins and cases filled with samples in bulk or fleece. There are also pictures of sheep and sheep stations, and as though standing ready to start on its journey of many hundreds of miles is a heavy wagon, laden with wool, more cumbersome even than the so-called prairie-schooners which bore across plain and mountain of America the argonauts of 1849.

In another apartment are the exhibits of cereals, flour, oils, and such as represent the tanneries and meat-preserving processes of New South Wales. Among them is an arch of corn cobs, artistically fashioned, and representing a prominent branch of colonial industry; for

GOATS AND SHEEP, CAPE COLONY

WINE, CAPE COLONY

maize thrives well on Australian soil, and is the only cereal that is largely raised for export. Here also are dried specimens of native grasses, such as are found on sheep and cattle ranges, with leaf tobacco, sugar-cane, and pyramids of food preparations and table delicacies. On the walls and pillars are large photographic views of public and other buildings in Sydney, and to the arch-ways of wool and corn is appended the Australian coat-of-arms, above it the colonial flag, on the field of which is the constellation of the southern cross.

Except for the exhibit of wool, Victoria, the smallest in size but the foremost of all the Australias in population and enterprise, has nothing worthy of mention, this not through indifference but on account of a severe financial depression, forbidding the appropriation of public funds. The collection of wools is from the Australian Sheep-breeders' association, and includes the choicest samples of the various grades in bale and fleece, with many fine and long wool varieties. In conclusion it may be said that the Australian exhibits, not only of agricultural specimens, but in the mining, fisheries, and other departments, display as they were never before displayed the varied products and the infinite resources and possibilities of the southern continent. Among these exhibits is much that is well worthy of being studied by American merchants and manufacturers, not merely as a matter of curiosity, but with a view to the enlargement of commercial intercourse. While our trade with Australia is of considerable amount, it is insignificant compared with what it should be, and the more so because the balance of trade is largely in favor of this country. New South Wales, for instance, sent us in 1891 more than $8,000,000 of her gold, and took from us in the same year goods to the value of more than $6,000,000, while shipping to this country little more than half that quantity of exports. While Australian merchants deal more largely with the United States than with any other foreign nation, their transactions are trifling in comparison with those of Canadian business men, who purchase in American markets nearly one-half of all that they require.

NEW ZEALAND HEMP

OSTRICH EGGS, CAPE COLONY

Small in size but of excellent quality, complete, compact, and in perfect taste, is the exhibit of Cape Colony, grouped in a glass pannelled enclosure decorated with banners and bannerets, its windows hung with ostrich eggs, and depicting the flora and scenery of southern Africa. On a revolving frame within is a choice collection of water colors, representing in natural size and hue the most beautiful and fragrant flowers and creepers, indigenous and exotic, among them some wonderful orchids and vines. In the decorative scheme is largely used a gray, silvery vine, which so far as is known grows only on Table mountain, near the foot of which lies Cape Town. Flanking the entrance ways are cases filled with ostrich plumes in their various shades of color, from those of grayish-brown, such as cover the back, to the soft, fleecy feathers, white as the driven snow, that are plucked from the tip of the wing. In the centre of the booth is a gigantic ostrich, and mounted on stands are two full-grown birds in all the glory of their plumage. In one of the cases, side by side with a large pyramid is a select assortment of eggs, some polished, and others painted in various designs.

Of other birds the collection is remarkable for variety of species, and brilliancy of plumage. Fish are represented in water colors, their scales displaying all the brilliant hues of semi-tropic climes. In the centre of the booth are mounted specimens of animals, showing the highest art of the taxidermist. Among them is an Angora goat, with its silky coating of hair, a fat-tailed sheep, whose unwieldy appendage is esteemed by Kaffirs a delicacy, and a so-called Boer goat, whose hair and carcase are worthless, and whose mission in life is to guide homeward the flocks at nightfall. Elsewhere are specimens of furs and pelts, with rugs fashioned from the skins of the golden jackal and

GRAIN AND GRASSES, FRENCH EXHIBIT

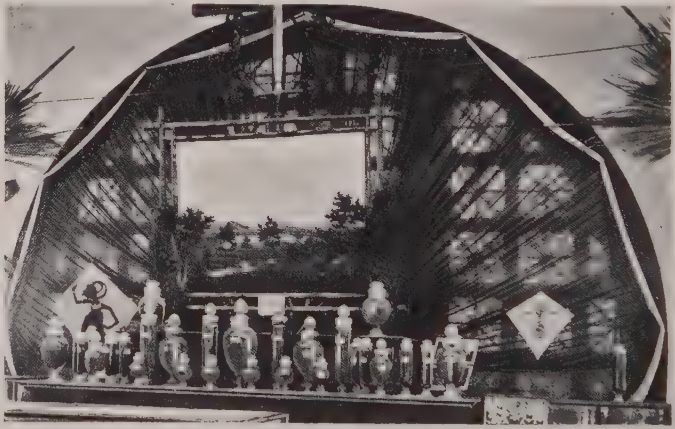
the spotted tiger. Of tusks there is a fair collection, including what is said to be the largest elephant's tusk in existence, more than seven feet long, and weighing nearly 160 pounds.

Of wool and mohair there is a plentiful display, the latter selling in the London market at thirty-five cents a pound, and comparing favorably with Turkish and other growths except for length of staple. Though a comparatively recent industry, exports of mohair for 1891 amounted to some 10,000,000 pounds, while those of wool for the same year exceeded 75,000,000 pounds. Cape wines and brandies are arranged in the form of a pyramid, and side by side with bush or native tea is tobacco, cured and in the leaf. Of cereals there is a small display, but one of superior quality, including samples of wheat that weighs nearly seventy pounds to the bushel. There are also the buchu leaves, used for medicinal purposes, with native grasses, gum-arabic, and dye and other woods of many descriptions.

Of miscellaneous articles there is an interesting assortment, including Kaffir, Zulu, and other weapons, implements, and curios, among them the assegai, thrown by the African bushmen with unerring aim, and which in the Zulu war dealt his death-blow to the prince imperial, son of Napoleon III. There are also the insignia of chieftaincy, including a curious cloak made of strands of twisted fur, such as is worn by a chieftain's wife on state occasions.

North of the Australian section, and adjoining the rotunda of Agricultural hall, is the pavilion of Ceylon, with pillars of ebony and wood-work elaborately carved. Tea forms the principal display, and those who are so inclined may test the quality of the brew, as prepared and served by native attendants. There is a model of a tea plantation, and in diagram form is shown a thirty years' record of Ceylonese exports to Great Britain, where most of the surplus teas are marketed. Other exhibits are native woods; cinchona, or, as it is more commonly termed, Peruvian bark; desiccated cocoa-nut, and the products of cocoa-nut fibre, as in mattings, ropes, and basket-work, these with a few skins, a case of plumbago, an irrigating machine, and a small collection of agricultural implements, including about all that Ceylon has to show us in this department.

CORK EXHIBIT, ALGERIA

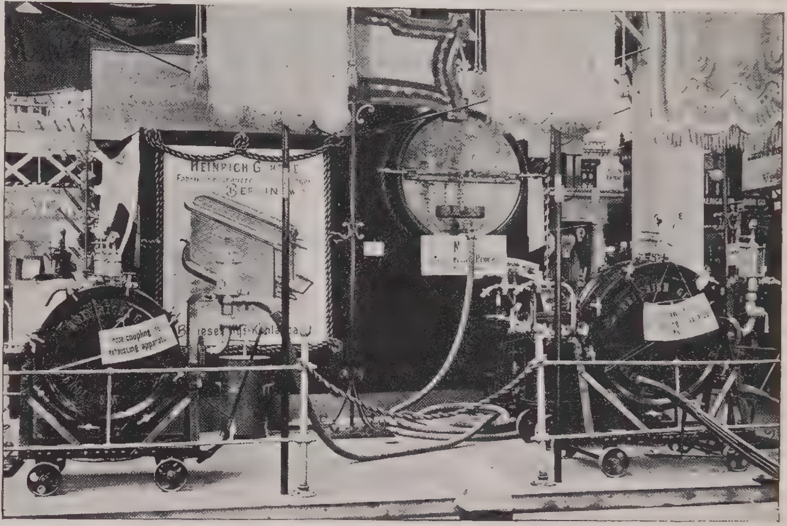


JAVANESE EXHIBIT

In France about one-half of the entire population depends on agriculture for a livelihood, the number of proprietary and tenant farmers amounting to nearly 4,500,000, the majority

GERMAN SECTION

belonging to the former class, with about an equal number of laborers and domestics. Add to these the wives and families of agriculturists, many of whom share in the work of the farm, and we have a total of some 19,000,000 persons supported by this industry. Partly through the agency of the law which requires the father to bequeath his property in equal shares among his children, the subdivision of farms has here been carried to an extreme. Nevertheless France still imports largely of cereals, the total of her average crop not exceeding 40,000,000 bushels a year. Nowhere are better understood the advantages of diversity of farming, and nowhere are the agricultural classes more frugal and industrious. Largely through their contributions France has been enabled to pay almost without apparent effort, the $200,000,000 of her war indemnity, to sink nearly twice that amount in the Panama canal project, and pay as interest and sinking fund some $260,000,000 on her $6,500,000,000 of national debt.



GERMAN BEER FILTERING APPARATUS

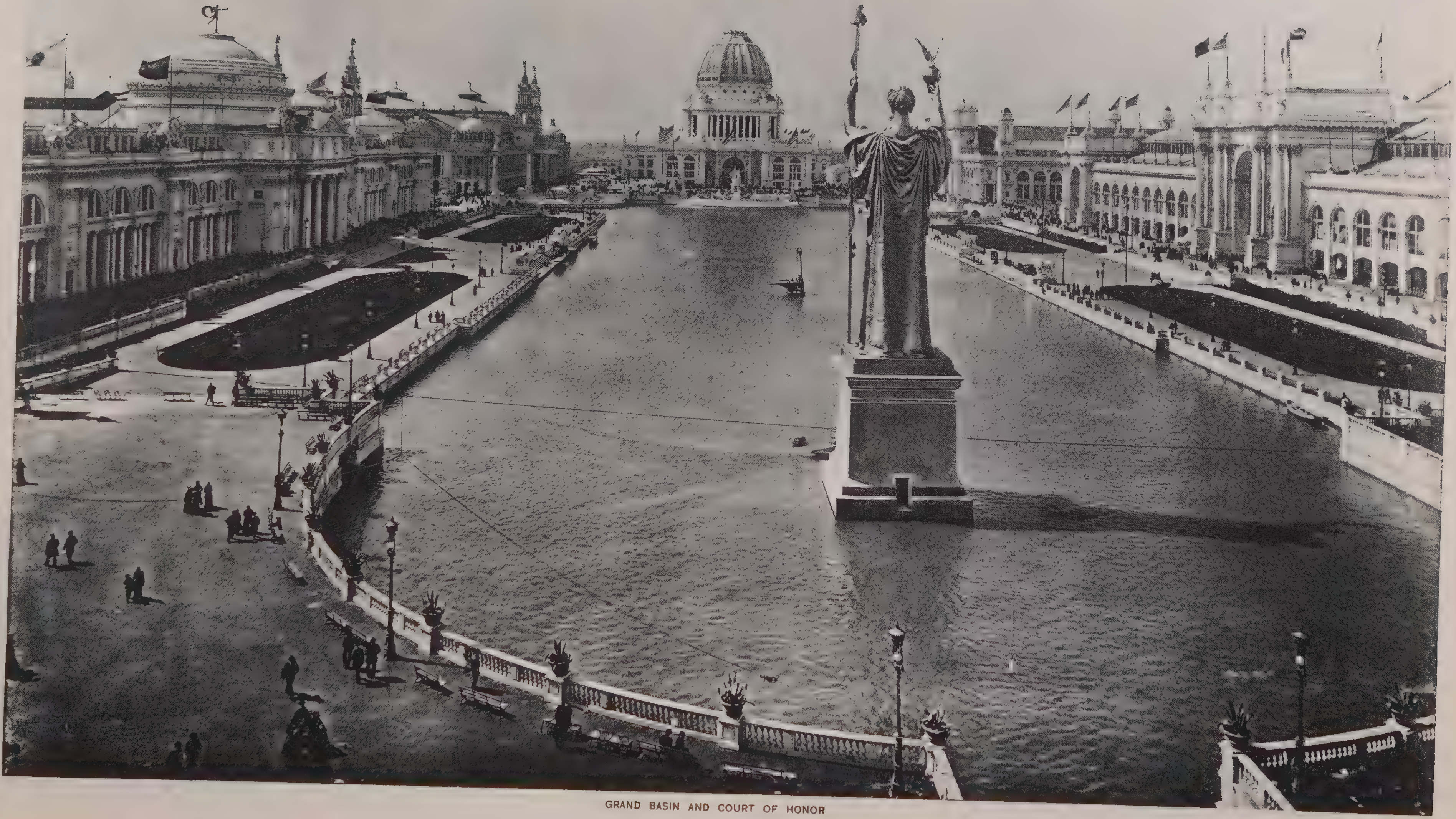
France and her colonies occupy sections in the annex, and the western and eastern portions of the main building, the exhibit of the government being installed between that of Russia and the United States. This consists largely of maps and charts, showing the location of vineyards, agricultural districts, and national schools of agriculture, with such statistical tables as represent the fluctuations in the prices of bread and breadstuffs throughout the republic from 1830 to 1891, and of meats and all agricultural products during the seventeenth and eighteenth centuries. The results of various experiments in the government laboratories are also given, and there is a model of the testing field, connected with the government seed house, with photographs illustrating the province of the French agricultural department, especially in sugar-beet culture, as conducted at the government farm at Grignon. In addition to these are models and programmes of the primary agricultural schools, with their methods of education fully explained.

APOLLINARIS WATER, GERMANY

BREWING PROCESS, GERMANY

Fronting on the eastern extremity of the central transverse nave are displayed the products of French farms, including food preparations. Grains and vegetables are arranged along the walls, with seeds and colored illustrations in the centre. Elsewhere are barrels of flour, glass cases filled with refined sugars, canned vegetables, fruits, and nuts, salad oils, liqueurs, and delicacies in solid and liquid form.

In the French pavilion the main attraction is a rectangular structure, about thirty feet long, and half that width and height, with an arched door-way in the centre composed entirely of small papers of chocolate manufactured by a Parisian house, and representing the daily output of 50 tons, valued at $40,000. In the



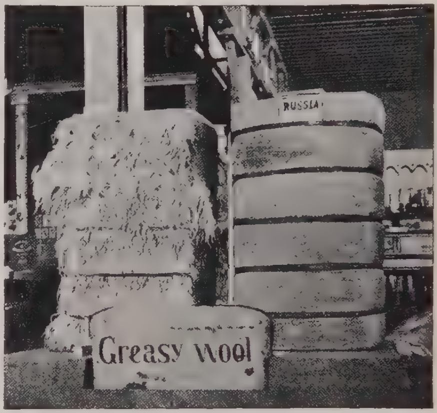
GRAND BASIN AND COURT OF HONOR

RUSSIAN GRAIN EXHIBIT

annex is a display of distillery apparatus, and a large portion of the space is occupied by a model barn, with granaries, stalls for live-stock, and other farm buildings enclosing a central yard.

In an adjacent section to the north of the pavilion the French colony of Algeria displays her products, the main exhibit consisting of cork in many varieties. The principal entrance to the Algerian edifice is framed with slabs of cork; within is the tree itself, and there are many carvings of superior design and execution. The rough bark is exhibited in bales, and sheets of cork are shown for use in the linings of hats, and the insoles of shoes. The entire collection represents an industry which is making rapid headway, if we can believe the statement here contained, that in this colony more than a million acres are covered with young cork-trees, not yet in bearing.

Cordage is also a leading Algerian product, many of the specimens here displayed being made from the native grass known as alfa. A mass of silk cocoons attached to the branches of a mulberry tree points to another prominent industry, as also the cases in this vicinity containing such products as olive oils, nuts, dried figs, grains, and cigarettes. Across the aisle from the main section is a tasteful structure containing a central court cooled by a beautiful fountain, its enclosing arches and floor in imitation of marble, and its walls hung with Moorish tapestries. This is a reproduction of an apartment in the palace of the Algerian governor, and adjoining it is the office of the colonial commissioner, with collections of native woods bound in the shape of volumes, a carved and inlaid cabinet, specimens of needle-work, tobacco, and minerals, and typical illustrations by native artists.



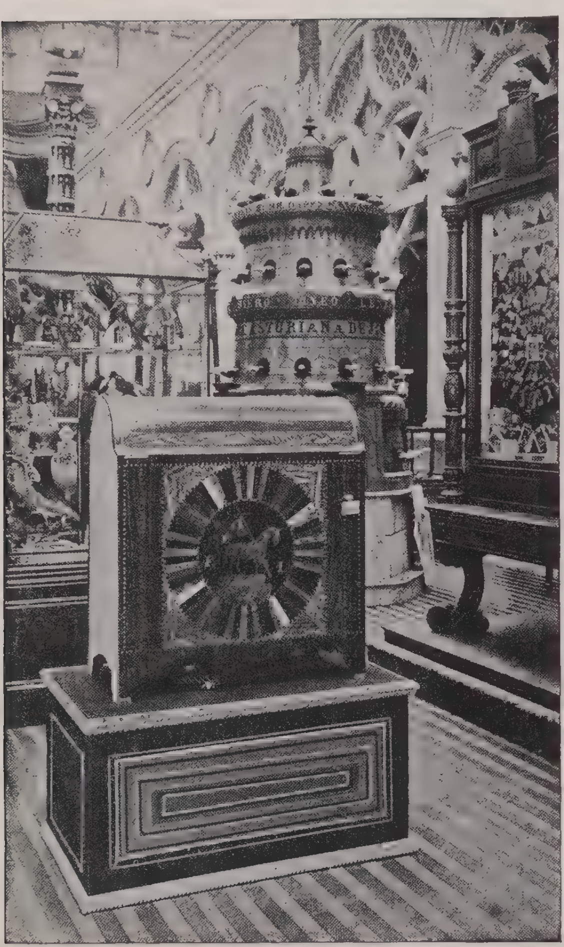
WOOL IN THE GREASE, RUSSIA

In Germany more than one-third of her 50,000,000 inhabitants are supported by agriculture, the total number exceeding 19,000,000, of whom nearly one-half are actual farmers or farm laborers. About fifty per cent of the entire area of the German empire is classed as arable lands, of which there are 65,000,000 acres, a goodly surface in truth, but less than is contained in a couple of our western states. As in France, agricultural lands are here minutely subdivided, with 2,500,000 farms of less than two and a half acres, and perhaps an equal number below 25 acres, while of those above 250 acres there are less than 25,000. Even the smallest of these holdings include a certain percentage of meadow and cultivated pasture lands; yet each of them suffices for the support of a family. But with his careful and laborious husbandry, the German turns his land to the best account, raising of wheat an average crop of nearly 50 bushels an acre, with other cereals in proportion, while of potatoes the yield is five times as large, far surpassing that of Ireland, the "land of potatoes and poteen." In Austria and Hungary considerably more than one-half the population is maintained directly or indirectly by agricultural pursuits, which, especially in the latter country, are rewarded by excellent returns.

THE DANISH PAVILION

The German and Austrian groups, the former by far the more interesting and extensive, are separated from the British section by the main longitudinal nave. In the latter the most noticeable feature is that which represents the mineral waters of Austria, an exhibitor from the neighborhood of Carlsbad displaying a huge metallic bottle at whose base is a number of the vessels used in the trade. Hops, barley, and seeds, wax and waxen goods, are also on exposition, with powders for the destruction of insects, and appliances and publications relating to the several industries of the apiarist.

In the German section, are two main centres of interest, ranking indeed among the most attractive features in Agricultural hall. The first of these is the pavilion of the Stollwerck brothers of Cologne, fashioned of chocolate and


PORTO RICO EXHIBIT

in the form of a temple of the renaissance period. It is 38 feet in height, and in its construction were used 30,000 pounds of chocolate and cocoa butter, the latter giving to the structure the semblance of marble. Blocks of chocolate form the foundation, upon which rest fluted columns crowned, above the architrave, by the emblematic eagles of Germany, and surmounted by a dome, with the imperial crown as apex. In the midst of the temple is a heroic statue of Germania, modelled after the figure on the Niederwald monument, and sculptured from a solid mass of chocolate. On its pedestal are reliefs, more than life size, of the emperors William I, Frederick III, William II, Bismarck, Von Moltke, and other historic characters.

The other exhibit to which reference is made is also in the shape of a temple, its court containing an exposition of the industries which centre in a Strassfurt establishment for the mining of salt and potash deposits, and their manufacture into fertilizers. This is known as the German kali works, a large stand in the centre of the court showing samples of the deposits as mined and prepared for the use of agriculturists, while from a broad platform depend a number of charts explaining the composition of the product, and its uses in supplying potash, phosphoric acid, and nitrogen for impoverished soils. A series of photographs also shows the visitor the large works connected with this enterprise at Cologne, with their mines, manufacturing departments, and laboratories.

In the German section are also displays of many varieties of prepared food and drinks, several firms making a specialty of food preparations for infants. As in the Austrian section, mineral waters, cordials, and liqueurs, to say nothing of beers and malt extracts, are in liberal display. The proprietors of some thirty German resorts, at which are famous springs or baths, have a collective exhibit of their waters in a pavilion adorned with statuary, and provided with settees and easy chairs for invalids, and others seeking information. Baden-Baden, through its city committee on baths, presents views of that well known resort, with plans of its new bathing establishment. The royal Prussian bath at Ems, the cold and the hot sea water baths of Heligoland, the royal Bavarian baths, and the Harzburg Springs company, purveyors to the dukes of Edinburg and Saxe-Coburg-Gotha, with other noted sanatoria are also represented. In the northwestern portion of the annex are the exhibits of machinery for the treatment of mineral waters, with refrigerators and the apparatus used in breweries and distilleries. Such agricultural appliances as ploughs, scythes, potato-harvesters, and threshing machines, with fertilizers of various descriptions are also on exposition.

MEXICAN WHEAT

Russia's exhibit, west of the French government section, demonstrates the varied resources of her vast empire in the form of structures of flax, tow, and hemp from the Caspian region, raw silk and tobacco from her Transcaucasian domain, and grains of all kinds from her central and southern provinces of Europe. Wheat and oats are displayed in sheaves, and threshed grain in vessels fashioned in imitation of bronze, a large collection of the latter arranged in the form of a lofty tower. The manufacture of candles is a flourishing industry in Russia, the largest and those of most elaborate design being used in the ceremonials of the church, of which some fine

MEXICAN TOBACCO AND LIQUORS

HENEQUIN PLANT, MEXICO

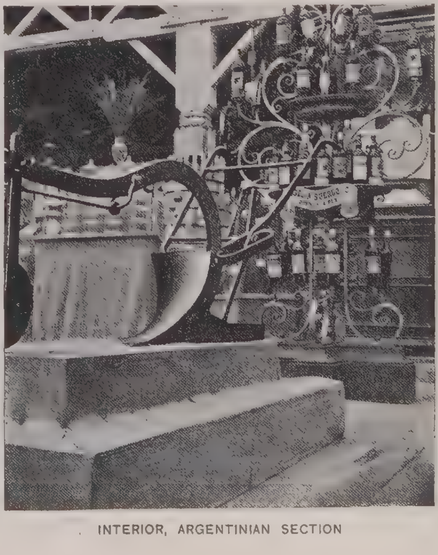
IN THE BRAZILIAN SECTION

specimens are here on exposition, arranged in structural forms. There are several imperial factories for the refining of sugar from beets, all of which have samples of their products, the government of Kieff adding to this collection specimens of honeycomb and confectionery.

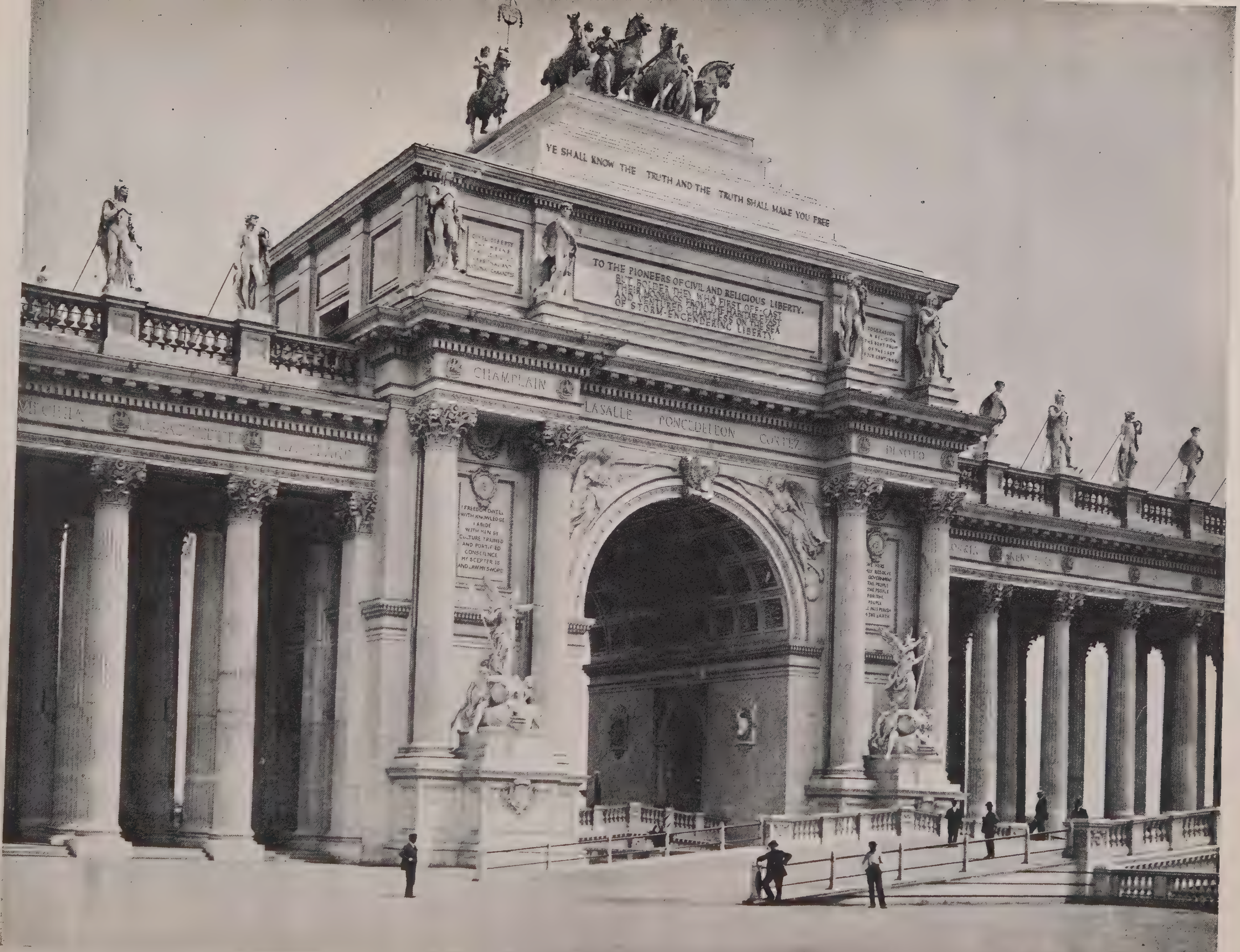
Of more than 1,000,000,000 acres of arable land contained in European Russia, at least 60 per cent is under crop, the total yield of all cereals for 1892 amounting to 1,700,000,000 bushels against nearly 3,000,000,000 for the United States. Within recent years nearly 7,000,000 of emancipated serfs have redeemed or paid for their land in labor or kind with government aid, the average holding of the peasantry not exceeding ten acres per capita. Erelong the most favorable outlet for the poorer class of agriculturists will be in central and southern Siberia, a region whose resources are as yet but little appreciated, though gaining in favor as the railroad, now approaching its eastern verge, lays open to settlement its vast and virgin expanse. What the western and Pacific states were to our own republic, that will Siberia become to the Russian empire at no very distant day.

Italy occupies a small rectangular section in the southwestern portion of the main hall, adjacent to that of the agricultural colleges and experiment stations. Her display is of a somewhat miscellaneous character, including a large collection of olive oils and food preparations, as pastes, almond, and honey cakes, macaroni and cheese, chocolate, sugar, spices, sweetmeats, and liqueurs, with a few specimens of flax and hemp. Silk, one of her leading industries, with nearly 100,000,000 cocoons, gathered yearly from more than 5,000 cantons, and with 200,000 women and children employed in the treatment and manufacture of silk, is here represented by a single exhibit of larvæ. In line with the Italian group, but at the opposite side of the hall, and adjacent to the Virginia section, Greece shows her raw silks and olive oils, from various localities, with specimens of honey and honey-comb such as Attica produced long before Homer bethought him of the

COTTON, BRAZIL

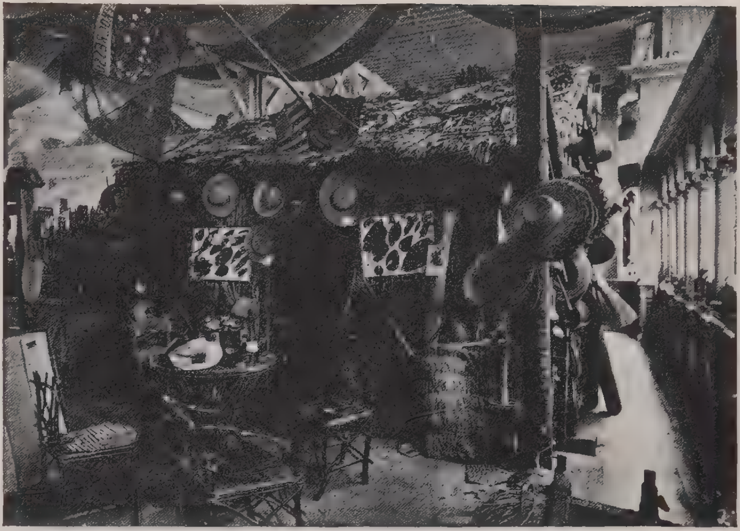


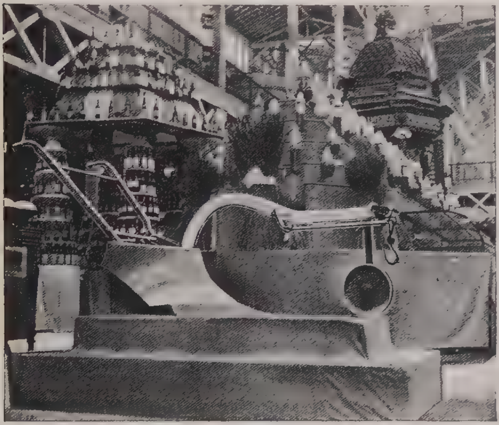
INTERIOR, ARGENTINIAN SECTION


YE SHALL KNOW THE TRUTH AND THE TRUTH SHALL MAKE YOU FREE
TO THE PIONEERS OF CIVIL AND RELIGIOUS LIBERTY.
BUT BOLDER THEY WHO FIRST OFF-CAST
THEIR MOORINGS FROM THE HARBORS FAST
AND VENTURED CHARTLESS ON THE SEA
OF STORM-ENGENDERING LIBERTY.
CHAMPLAIN
LASALLE
PONCE DE LEON
CORTEZ
DE SOTO
I FREEDOM DWELL
WITH KNOWLEDGE
I ABIDE
WITH MEN BY
CULTURE TRAINED
AND FORTIFIED
CONSCIENCE
MY SCEPTER IS
AND LAW MY SWORD

famous simile in which the Grecian hosts are likened to a swarm of bees covering the plains of Troy.

Holland, Sweden, and Denmark are grouped together in the northeastern portion of the hall, an Amsterdam chocolate house monopolizing most of the space allotted to the Netherlands. In its booth are dummies of life-like appearance, representing women and children about to receive their favorite beverage from the hands of a waiting maid. Somewhat of a curiosity is the Java kapok, a fibre used for bed-filling, and for which are claimed the advantages of remarkable elasticity and lightness.

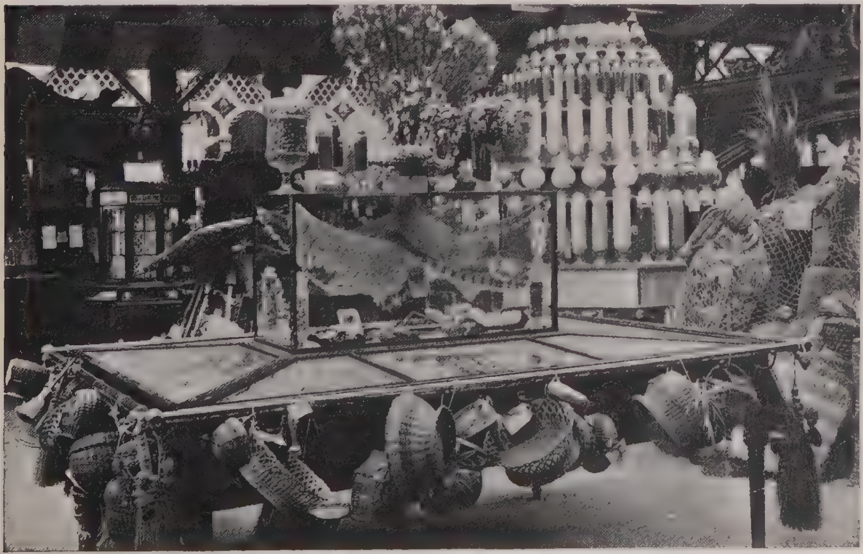

MOUNTAIN HUT, BRAZIL


ARGENTINIAN WINES AND GRAINS

Sweden illustrates her paper manufactures from wood pulp in the form of a small pavilion within her section, its base composed of segments of the trees generally used for the purpose, a large twisted column representing the finished product. Next to paper, Swedish punches, including such as are made of arrack, are the most prominent exhibits, while in the adjoining Danish collection the display of butter and a milking machine whose workings are illustrated on a model cow, are features not to be overlooked. In the latter is a booth filled with chocolate from a Copenhagen factory appointed as royal purveyor, and containing busts of the king of Denmark made of that article. The main entrance to the Danish pavilion represents a farmhouse, with high thatched roofs and broad gables, and with national types of women and pastoral scenes depicted on panels in the outer walls.

Spain and the Philippine islands jointly occupy a pavilion west of the main northern portal. The exhibits of the former include summer, red, and winter wheat, with other grains, of which some are prepared for use in various forms. There are also preparations of food and drink, as soup, pastes, arrow-root, tapioca, confections, honey, and chocolate. Of alcoholic, vinous, mineral, and other beverages there are many samples, and in the group of olive oils are 100 specimens. Of wool there are a few assortments, and in the form of a hut are the fibres peculiar to the Philippine islands. Porto Rico sends an assortment of coffees, sugars, tobaccos, cigars, native woods, and curios. Near by is the booth of Trinidad, some of whose exhibits duplicate those of Porto Rico, but contain also collections of birds, with special native products and curiosities.

SOUTH AMERICAN PRODUCTS

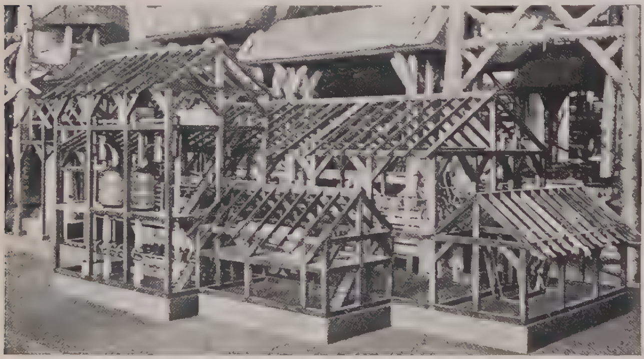

BRAZILIAN BASKETS AND SILK COCOONS

PARAGUAYAN EXHIBITS

ALLIGATOR AND SNAKE SKINS, PARAGUAY

In the Cuban pavilion, the bulk of the exhibits consists of tobacco in leaf, or in the form of cigars, and sugars of various grades manufactured from the cane. Upon the wall are statements from chambers of commerce as to the production of these staples, and also of Cuban minerals.

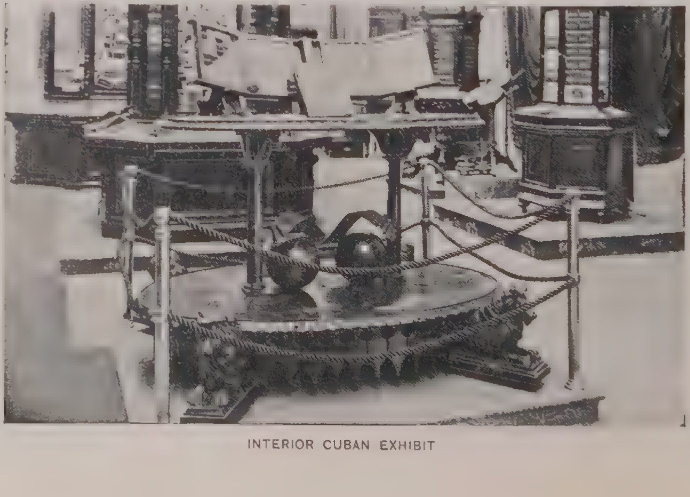
Prominent among the exhibits of Latin-American countries are those of the Mexican section, and especially as to their collections of tobacco, fibres, and grains. Side by side with cigars and cigarettes is the raw material in leaves of phenomenal growth, while the fibres of the maguey plant are heaped in and around a huge central basin, and appear elsewhere in the form of rope, matting, and cloth. Some 2,000 varieties of seeds, spices, and grains are here on exposition, and there is a fair collection of the sheath-like fruit of the vanilla. Sugar made from the cane, and soap from cotton seed oil, represent important branches of industry, and there are specimens of wild cotton indigenous to Mexico. Samples of native drinks are plentiful, including pulque and other liquors extracted from native plants, with such as are made from the orange, lemon, apple, pear, and peach.



SUGAR MILL, CUBA

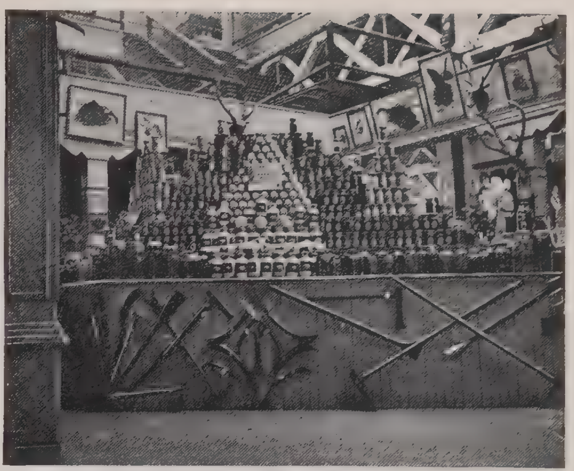
Richly decorated in green and gold is the pavilion of Brazil, with its attractive and varied display. Noticeable among the exhibits are pyramids of wool and tobacco, and a hut constructed of sections of fibrous plants, with hats of the same material arranged in the shape of festoons. There are also in various grades and forms coffee, sugar, silk, grasses, and manufactures of native fibres, with Brazilian wines and other beverages.

The Argentine republic gives prominence to her stock-raising industries. Wool in the fleece and other forms is everywhere in this pavilion, one of the walls of which is almost covered with tanned hides and pelts. Of wines, sugars, and tobacco there is also a creditable display. Paraguay shows her medicinal plants outside of her section. Within are several samples of native tea, which there takes the place of the Chinese product, and is largely exported to other countries. Though not suited to American palates, it is a less injurious beverage than most of the varieties that Japan and China send forth. The exhibit indicates that Paraguay intends to make herself known as a tobacco-growing country. Here also is the cassava, or manioc



INTERIOR CUBAN EXHIBIT

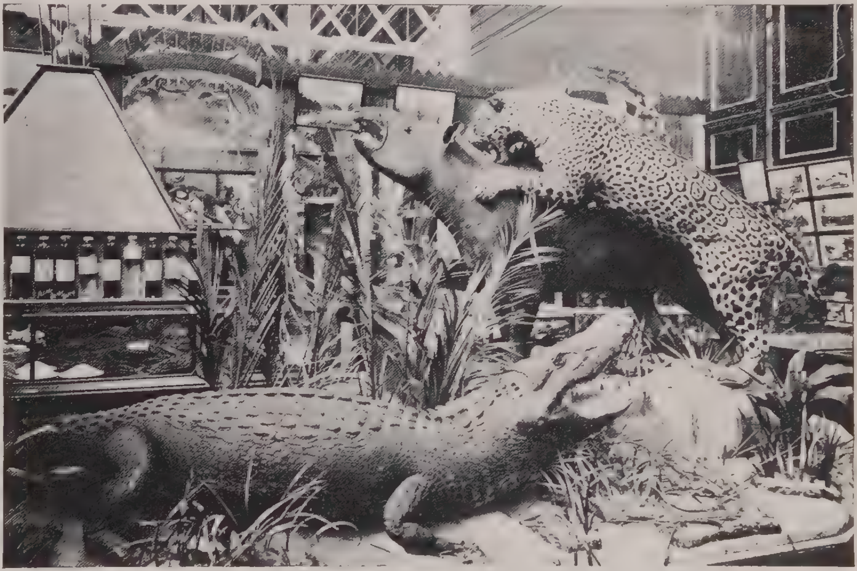
JAPANESE PAVILION



JAPANESE CANNED GOODS

root, from which tapioca is prepared. As this is a collective display, it includes articles of pottery, carved wood, canes made of native trees, laces, and other illustrations of industries and resources.

On the panels of Ecuador's miniature pavilion are depicted the governor's palace at Quito, and scenes typical of the republic. The exhibits include tapestries, porcelain, paintings, and wood and ivory carvings, the last of excellent workmanship. A model of a human skull, carved from wood, and skilfully colored, is a remarkable specimen of imitative work. Among manufactured articles—for this is also a collective display—may be mentioned boots and shoes, saddlery, hats, clothing, and tinware. There is a small collection of native woods, and curios and relics are plentiful, including a few primitive agricultural implements, and costumes of Indians.



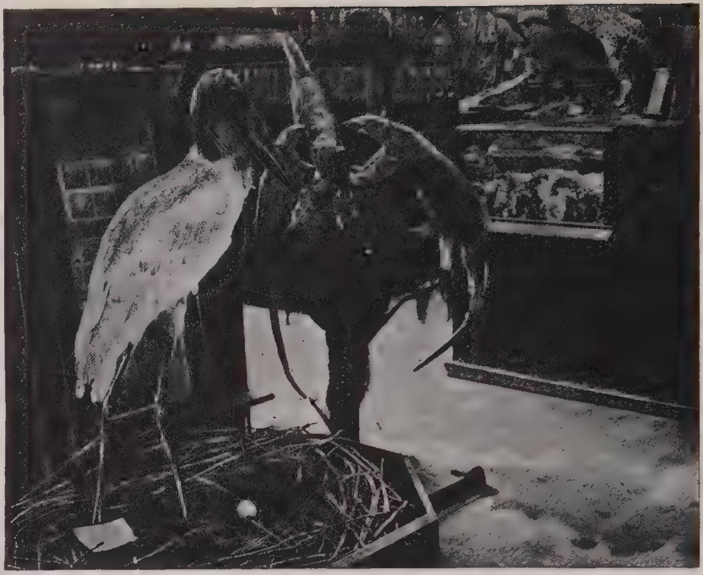
ALLIGATOR, TAPIR, AND JAGUAR, BRITISH GUIANA

In the northeastern portion of Agricultural hall, Uruguay has an ambitious display, representing many branches of her industries and arts. In the centre of her pavilion is a column of dark wood, erected by the Liebig Extract of Beef company, whose works and yards at Fray-Bentos are probably the largest industrial establishment in South America. Around it are bottles of the extract, and photographs of the factory and grounds, with specimens of candles and soaps in a case adjacent. Elsewhere are fleeces and piles of long silky wool, with all the grains of the temperate zone, with liqueurs and mineral waters, minerals and woods, and collections of paintings, books, and specimens of work from pupils of the public schools. Among the pictures, one of the most remarkable represents a young mother, drawing aside the coverlet from a sleeping infant, her hand upraised in a gesture of warning. The educational exhibits abound in specimens of kindergarten work, and there are many illustrations of proficiency from pupils of the higher schools, conducted jointly by the government and the catholic church.

ANT EATER, BRITISH GUIANA

South of the Mexican section is the Japanese pavilion of bamboo and matting, its outer walls adorned with green panels of the latter material. The exhibits of tea, with photographs illustrating the methods of picking and packing, are of special interest to the people of the United States, who consume so large proportion of this product. Jars and boxes of rice and vermicelli, leaf tobacco and cigars, wax made from berries as well as the more common kind, plantain fibre, hemp, and matting are also on exposition. There is a large assortment of cocoons, and among other curiosities are gourds made of snake skins. Brandy manufactured from rice, beers and vinegars, fish sauces, and other condiments and beverages, some of them peculiar to the country, are arranged side by side with canned salmon, trout, beef, lobsters, oysters, and sardines.

An attractive feature is the collection of birds and fowls, including such as are found in forest and on farm, and those which are used for food. Among them are bantams and Siamese chickens, and mounted on high in a coop is a pair of long-tailed fowls, one of which has an appendage more than ten feet in length. In the pictures scattered throughout the pavilion are illustrated tea plantations and processes, together with many ingenious devices whereby the Japanese ensnare the birds of forest, field, river, and lake. These include decoy birds hung in cages, nets attached to long bamboo poles, and limed ropes stretched over the water, all of which are represented in graphic art.



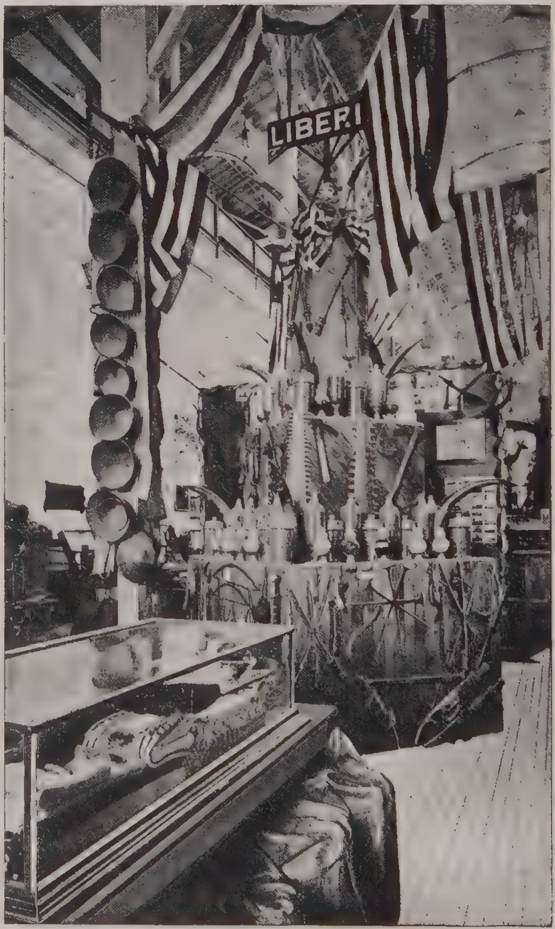
STORK AND ANT EATER, BRITISH GUIANA

British Guiana and Curacoa, the latter a small colony of the Dutch West Indies, have small adjoining exhibits in the northwestern corner of the hall, in which are brought together many forms of wild and civilized life. A case in the latter section contains the antiquities of Carib tribes, and near it is a burial urn of clay. Among other curiosities are samples of shell and feather-work, whose bright colors stand forth in strong relief.

MONKEYS, BRITISH GUIANA

British Guiana has a more elaborate display, as befits her resources and commercial importance. Birds of brilliant plumage, crabs, turtles, sword-fish, a sea cow, an alligator, a so-called bear howler, whose roar is out of all proportion to its size, with ant-eaters, deer, squirrels, raccoons, armadillos, opossums, and in the centre of the pavilion, a jaguar perched on the shoulder of a tapir, illustrate the animal life of forest and water. Another illustration of forest life is presented in the highly polished sections of native woods arranged around the structure, unfinished logs serving as pillars and beams. Thus are exhibited more than 100 specimens suitable for ship building, railroad ties, cabinet work, and other purposes. A series of pyramids, gradually rising in height, and increasing in size, illustrates the progress

SLAVES IN COSTUME, CURACOA



LIBERIAN SECTION

SIAMESE PAVILION

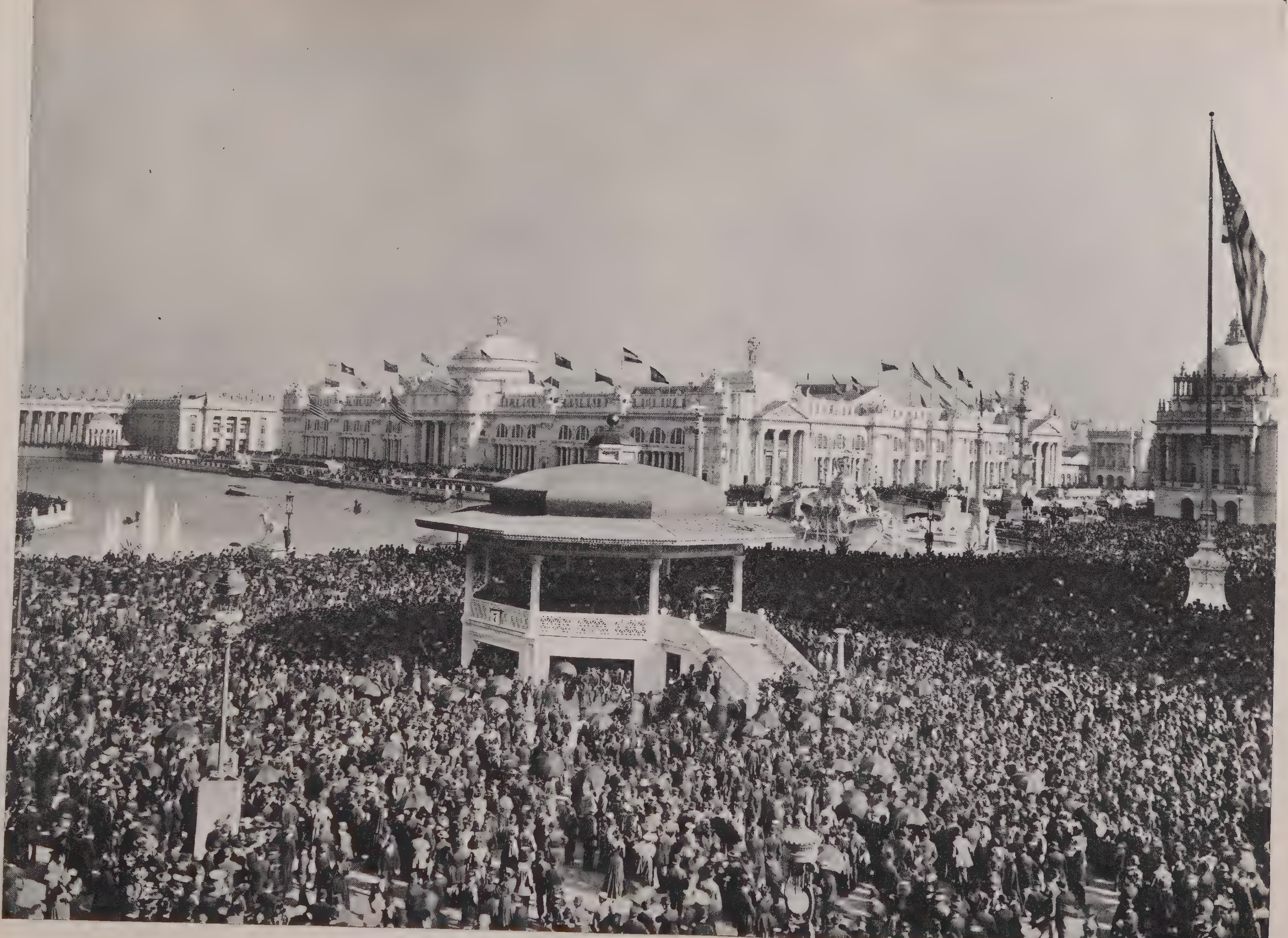
in the production of gold from 1884, when the entire yield was but 250 ounces, to 1892, when the export was nearly one hundred times as much.

Johore, in the southern extremity of the Malay peninsula, has a tasteful pavilion between the Brazilian and Mexican sections. From the main entrance floats the star and crescent, and near it, within the booth, is a large bust of the sultan, with photographs of his palace, and the scenery of his dominion. On one side are specimens of printing from the imperial establishment at Singapore, and on the other, books and charts from the native schools, with a heavy wooden block to which the rebellious pupil is chained. The exhibits include samples of coffee, tea, copal, rice, sweetmeats, betel nuts, spices, sago, rattan, and preserved fruits, the last including a species of plum, which, as is claimed, is the most luscious of all the fruits. There are also shown the various tools by which the pith is extracted from the palm, grated into powder, and kneaded with water, in the preparation of sago flour, several jars being filled with sago cakes. Ranged along one of the outer walls are groups of agricultural implements, and strung beneath the cornice is the dried skin of a huge boa constrictor.

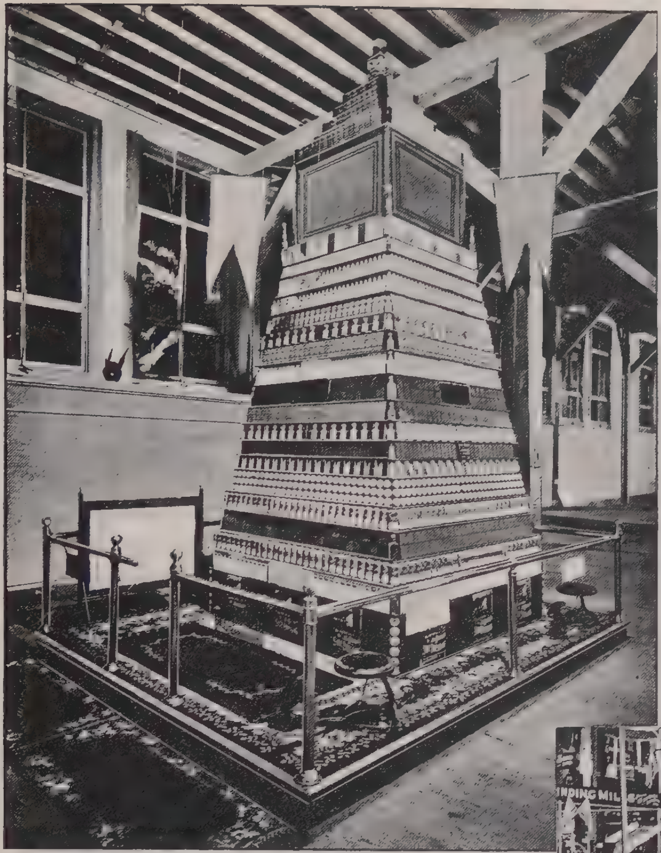
The forest wealth of Johore is illustrated in another portion of the hall by polished sections of native woods, and by a large and beautifully carved model of the royal residence, with the dining room and kitchen which connect with it. Here also are sheets of the reddish substance stripped from the inner bark of a native tree, and largely used for clothing.

In the centre of the United States pavilions is a Persian exhibit of rugs, tapestries, ceramics, brass-ware, and wood-carvings. The fabrics come from all the industrial centres of the empire, some fashioned almost entirely of silk, and others of the wool of the Angora goat. Brilliant colors seem to be in disfavor, deep blues and yellows being mostly used, except for the silken rugs of Shiraz with their changing hues, and those of Khorassan dyed in brilliant carmine. Gold and silver embroideries

ORANGE FREE STATE



ADMINISTRATION PLAZA CHICAGO DAY

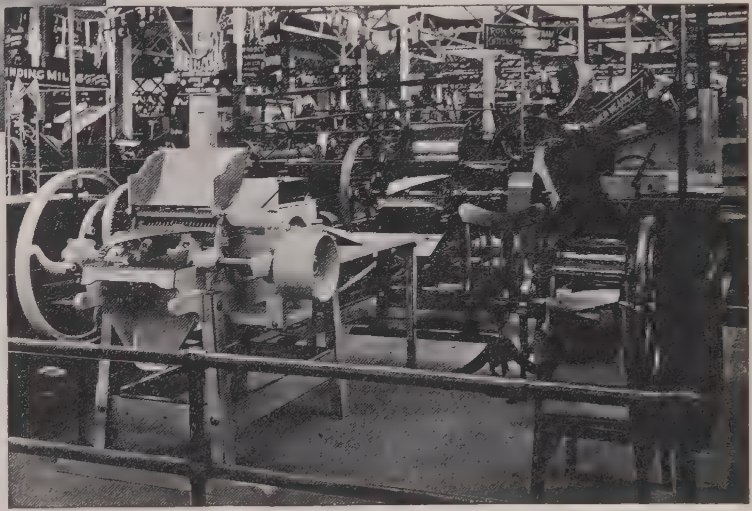


OIL PYRAMID

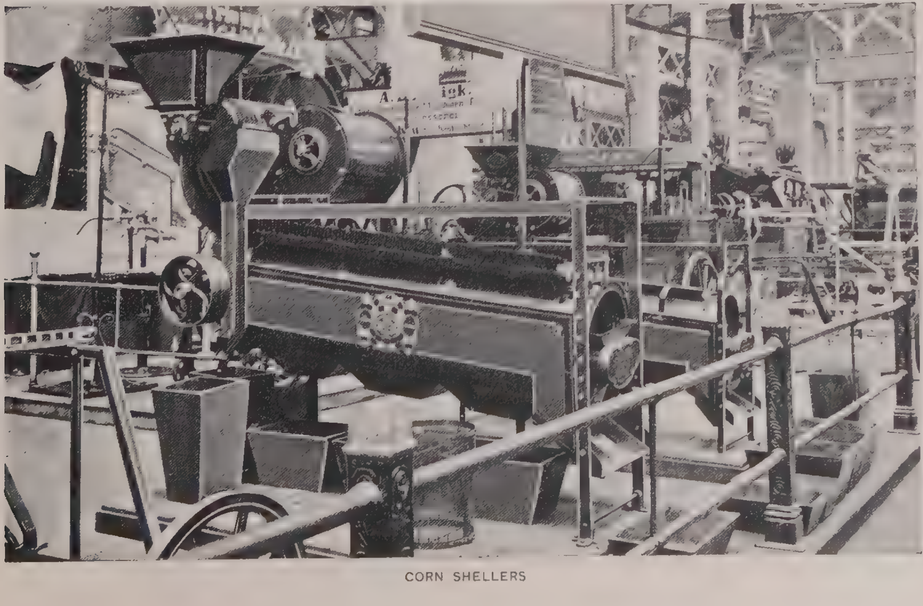
and several specimens of rich jewelry work are also on exposition; but more precious than these is a translation of the entire Koran written on tiny parchment leaves, and enclosed in a small box which could be easily carried in the pocket.

In the extreme northwest corner of the main building is the Liberian exhibit, which, though small in size, displays to excellent advantage the resources of the West African republic. Two immense horns form an arch to the chief entrance of the pavilion. Animal life is here in many forms. There are horns of cows, of antelope, elk, and deer, tusks of elephant and hippopotamus, and in the background is grouped a large collection of the skins of deer, monkeys, squirrels, tiger-cats, leopards, otters, coons, and snakes. Heads of different animals protrude from the walls, and more strange than all else is the miniature hippopotamus mounted upon a table. Until its capture in Liberia, a few years ago, this was believed to be an extinct species, and to-day there are only two other mounted specimens in existence, one in Paris, and the other in London. As to implements, weapons, clothing, and curios illustrative of life in Liberia, there are bracelets of iron, brass, and copper, leather bags and water bottles, blue and white cloths, warriors' caps, and women's skirts and head-dresses of grass, with leather charms, hideous wooden idols, spears, swords, daggers, and dirks, looms, inkstands, pens, bars of iron, wooden sandals, embroidered gowns, hammocks of cloth, yarn, and grass, powder horns, photographs, postage stamps, postal cards, metal and paper money, newspapers and books, strainers for palm butter, palm oil gourds, blacksmiths' tools, and bellows, chairs, stools, and trunks of bamboo, fishing nets and baskets, and fine needlework. Among the last is an embroidered satin quilt, upon which is represented in raised work a coffee tree in full bloom.

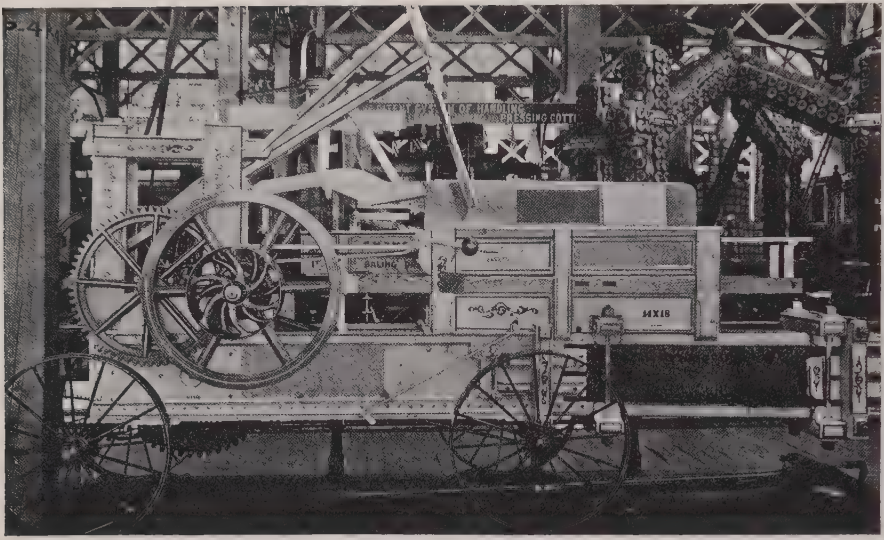
From an enumeration of the articles displayed, it would be inferred that Liberia is still a country of tribal distinctions, as well as a community of civilized and intelligent people. The contrast in the social conditions of the republic is illustrated in a reproduction of the bamboo hut, thatched with



FODDER CUTTING MACHINE



CORN SHELLERS

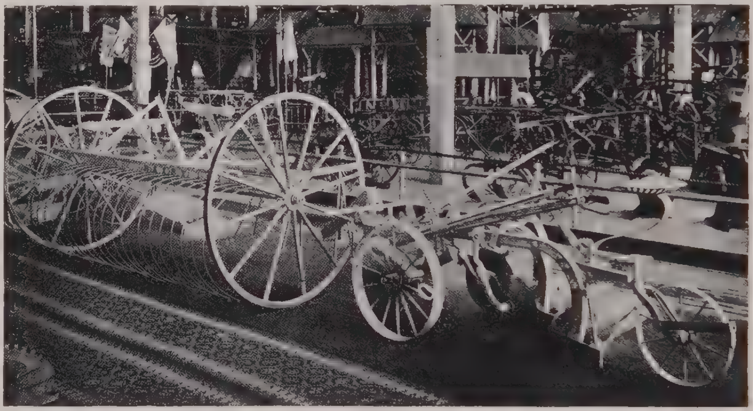


BALING PRESS FOR HAY AND STRAW

palm leaves, and the modern Liberian house, with its two stories and attic, surrounded by wide verandahs, and containing spacious halls, and airy cheerful rooms. Among the exhibits which show the products of the country and its growing commerce, may be mentioned coffee in bags and jars, sacks of cocoa, and of red, blue, and yellow dyes, bundles of fibres of the bamboo and plantain, boxes of iron ore and ivory, barrels of palm and nut oils, bunches of rice, and cases of crude rubber.

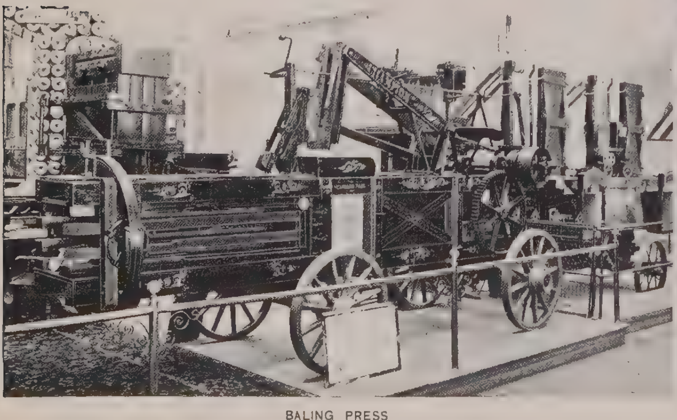
The Orange Free State has an attractive home in the south-western portion of the hall, decorated with skins, pelts, and ostrich plumes. A case of rough diamonds glistens near the entrance, and in the interior is a structure composed of jars of grain surmounted by a native deer. Near the Mexican section Siam has a booth containing grains, tobacco, edible birds-nests, and models of primitive vehicles and agricultural implements.

Along the aisle which separates Agricultural hall from its annex, are the collective exhibits of seeds, oils, and packing industries. Several of the first are housed in attractive pavilions; but as the main collection of their exhibitors is in the Horticultural building, this is by comparison a minor display. Among packing houses, however, such firms as Armour and company, Swift and company, and others of world-wide repute, not only show manufactured products, as butterine, stearine, lards, and oils, but also their methods of packing, preserving, and transporting meats. One firm exhibits a model refrigerator car, with glass sides, its contents neatly arranged for shipment. The hog is seen in all postures, and fashioned of many materials. One group contains a stuffed animal in a gilded chariot, with shoats in place of steeds; in another is a huge hog made of lard, with spectacles on snout, and pen and inkstand beside him, while a third exhibitor symbolizes perhaps the prosperity which pork has brought him in the form of a group of golden pigs around one of the pillars of his pavilion.

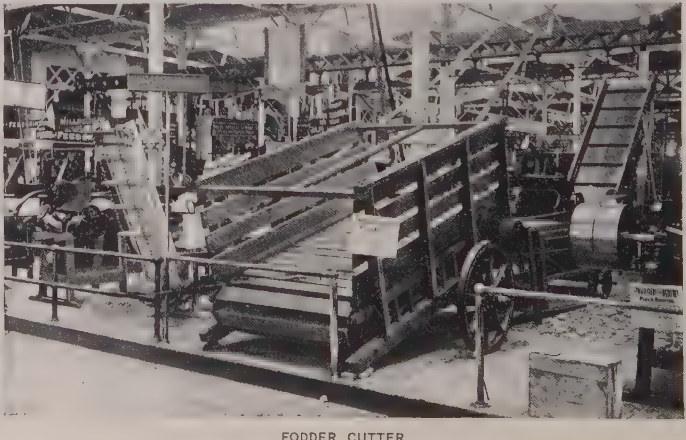


HAY RAKE

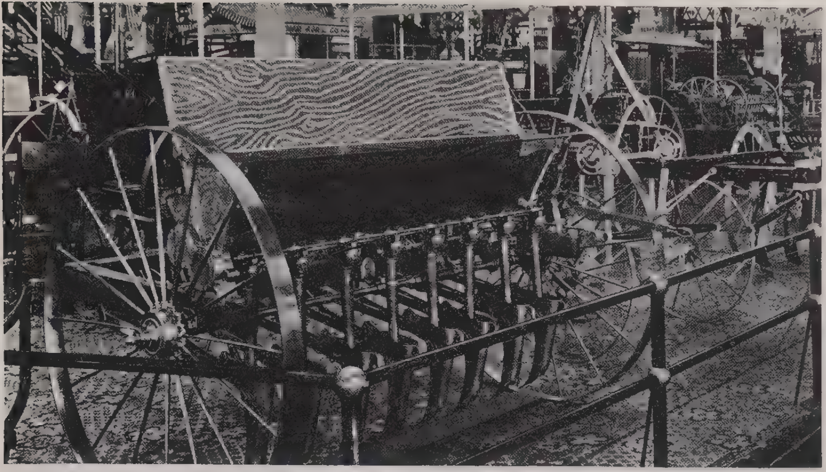
The American Cotton Oil company, of New York, has a structure in this vicinity, in the shape of a circular colonnade of Corinthian pillars, joined by metallic garlands which meet in the centre, and support an American eagle perched on a globe, the entire composition resembling frosted silver. Opposite is one of somewhat similar



BALING PRESS



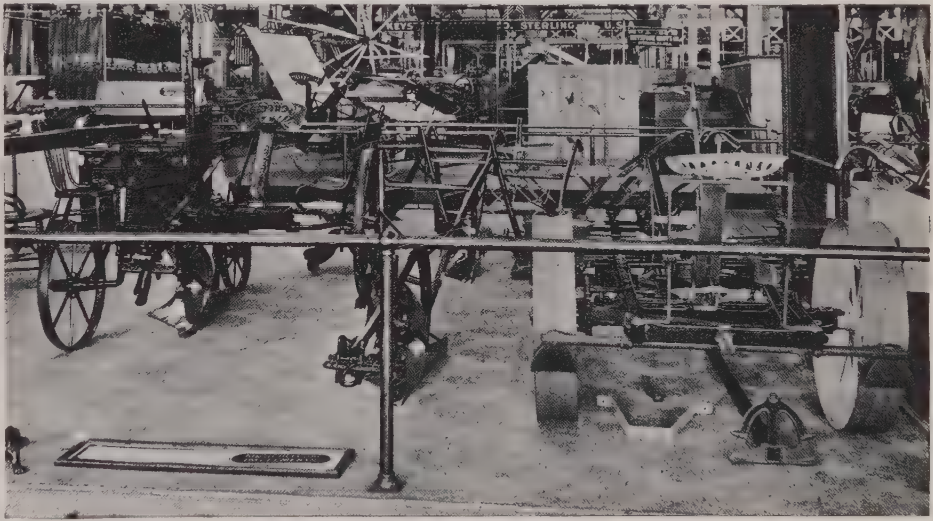
FODDER CUTTER


A MODERN DRILL

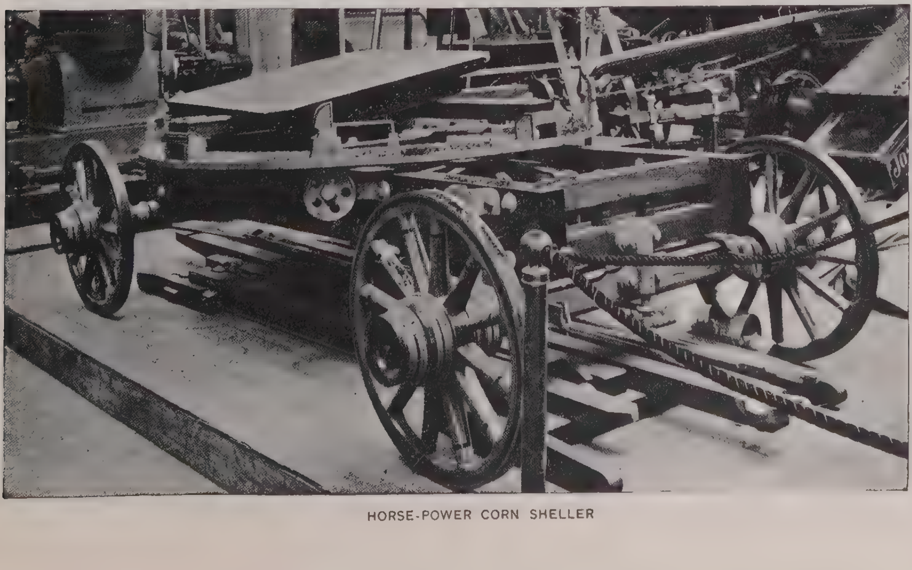
CULTIVATOR

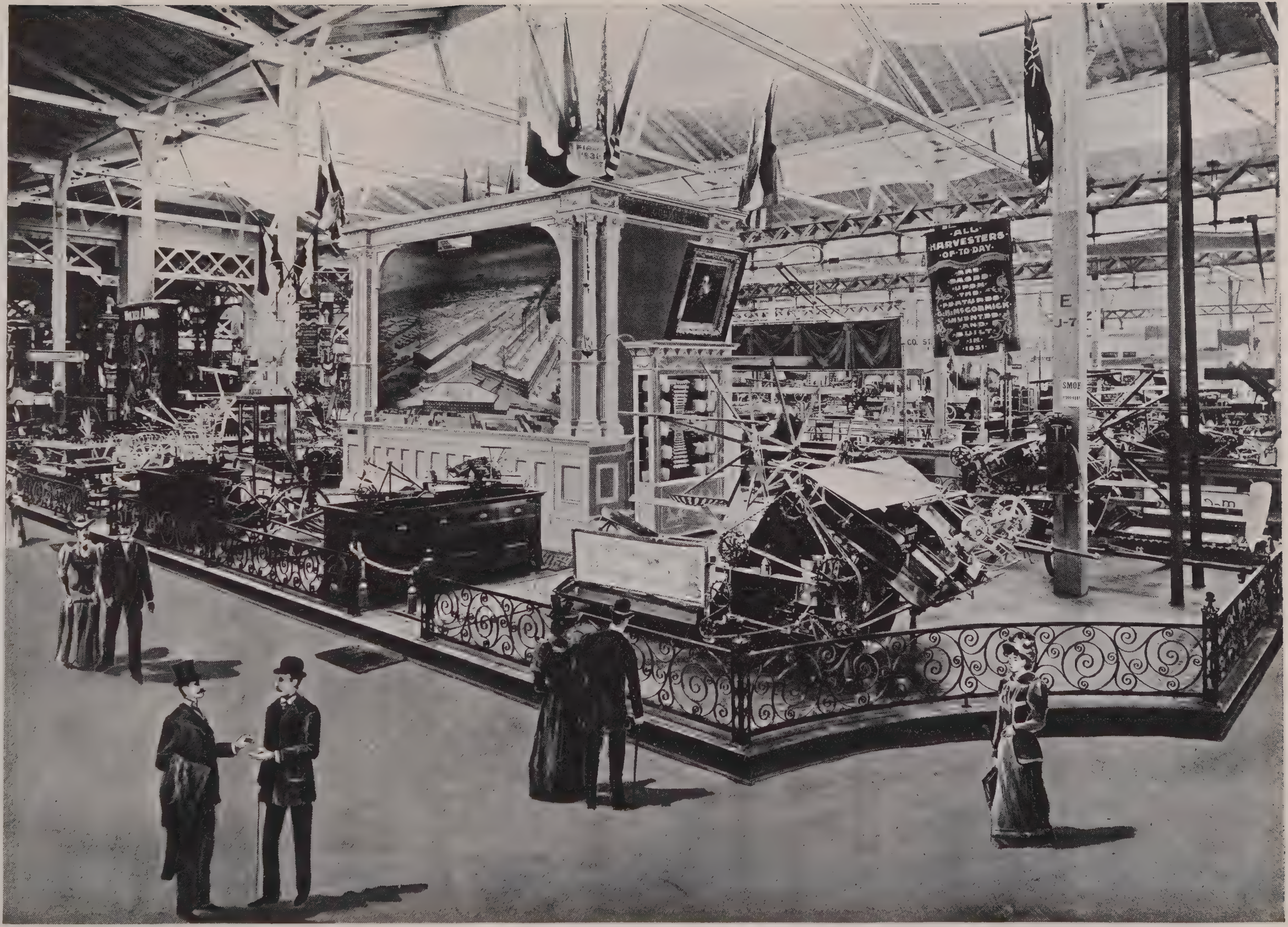
design, representing one of the company's departments transacting business under another name, and manufacturing a preparation of cotton-seed oil and beef fat known as cottolene.

In the northern portion of the annex, Canada, France, Germany, and Russia have a collection of agricultural machinery, together with such as is used for manufacturing farm products into food and other preparations. Apart from these, the annex is mainly occupied by the collective exhibit of the United States, Illinois, New York, Ohio, Iowa, Minnesota, Wisconsin, and Michigan, combining to present a forcible illustration of American ingenuity and industry. From the special forms of agriculture developed in various sections of the country have been evolved the hundreds of machines here placed on exhibition. Among them are the plows used on prairie lands, and such as are specially constructed for the cultivation of hill-sides. There are harrows and pulverizers, threshing machines and separators, reapers and binders, fanning mills and feed cutters, mowers and drills, grain measures and baggers, straw stackers, stump extractors, hay cutters and rakes, manure spreaders, and presses for hay, straw, cotton, and fibre. There are also such special appliances as the potato planter, digger, picker, and loader, the corn and pea sheller, the rice and coffee huller, the tobacco hiller, the oat clipper, the grape and berry hoe, the horse clipper, and sheep shearer.

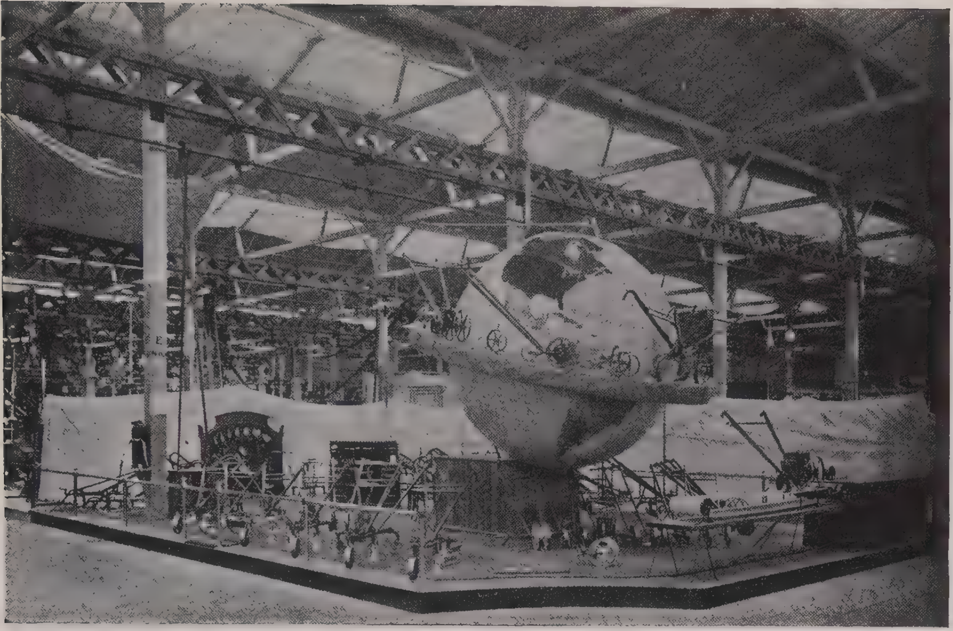

AGRICULTURAL IMPLEMENTS

A mere enumeration of the more prominent groups and special apparatus contained in the annex is a sufficient excuse for omitting descriptive detail,


HORSE-POWER CORN SHELLER

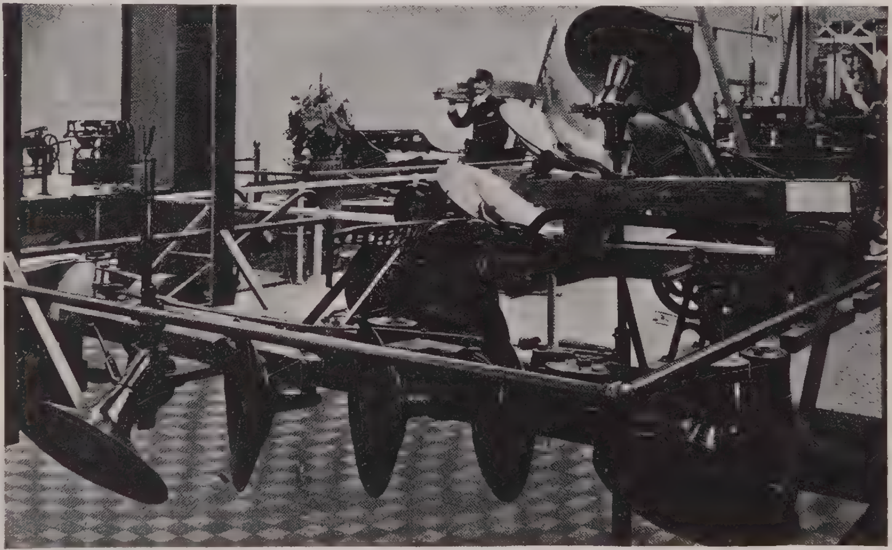


REAPER EXHIBIT, AGRICULTURAL BUILDING



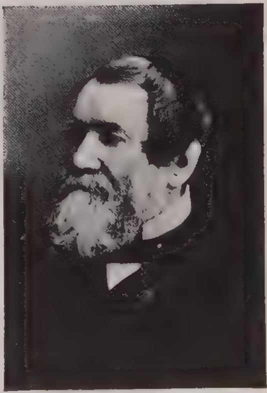
DISPLAY OF GARDEN TOOLS

and it is almost unnecessary to say more than that the foremost of American manufacturers have placed their choicest specimens on exposition. Among the more noticeable exhibits is that of the McCormick Harvesting Machine company of Chicago, who are the largest manufacturers of their kind in the world. Their exhibits consist of harvesters, binders, mowers, and reapers, the first including rice and corn harvesters, and all of them extensively used, not only in the United States, but in foreign lands, wherever grains and grasses will grow. In the patent office exhibit of the Government department, there is a series of models, showing the processes of development in the McCormick machine, and forming with others, a complete illustration of the progress and preëminence of the United States in the manufacture of agricultural machinery. Side by side with the perfected mechanisms of the present day is the model of the first practical reaper invented by Cyrus H. McCormick in 1831, and in the summer of that year, worked with excellent results in a field of oats at Walnut Grove, Virginia. He was then only twenty-one years of age, but inheriting from his father, Robert McCormick, a taste and gift for invention, took up his work on the reaper after observing the failure of previous attempts made by the latter. Hence his name was deemed worthy of a place among those of the great inventors and discoverers inscribed on the frieze of Machinery hall, for in his original reaper were embodied the fundamental principles on which all reapers and harvesters have since been made.

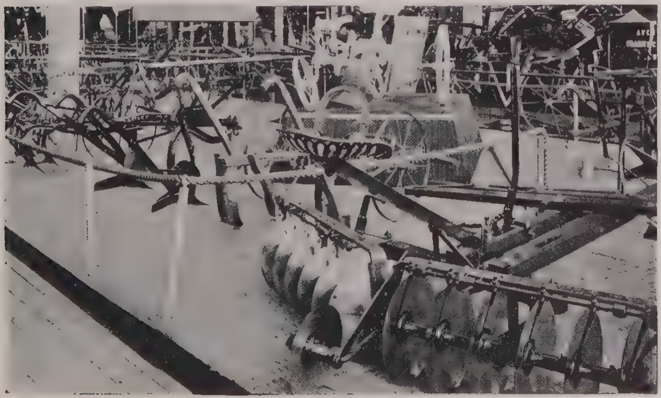


ROTARY PLOUGHS

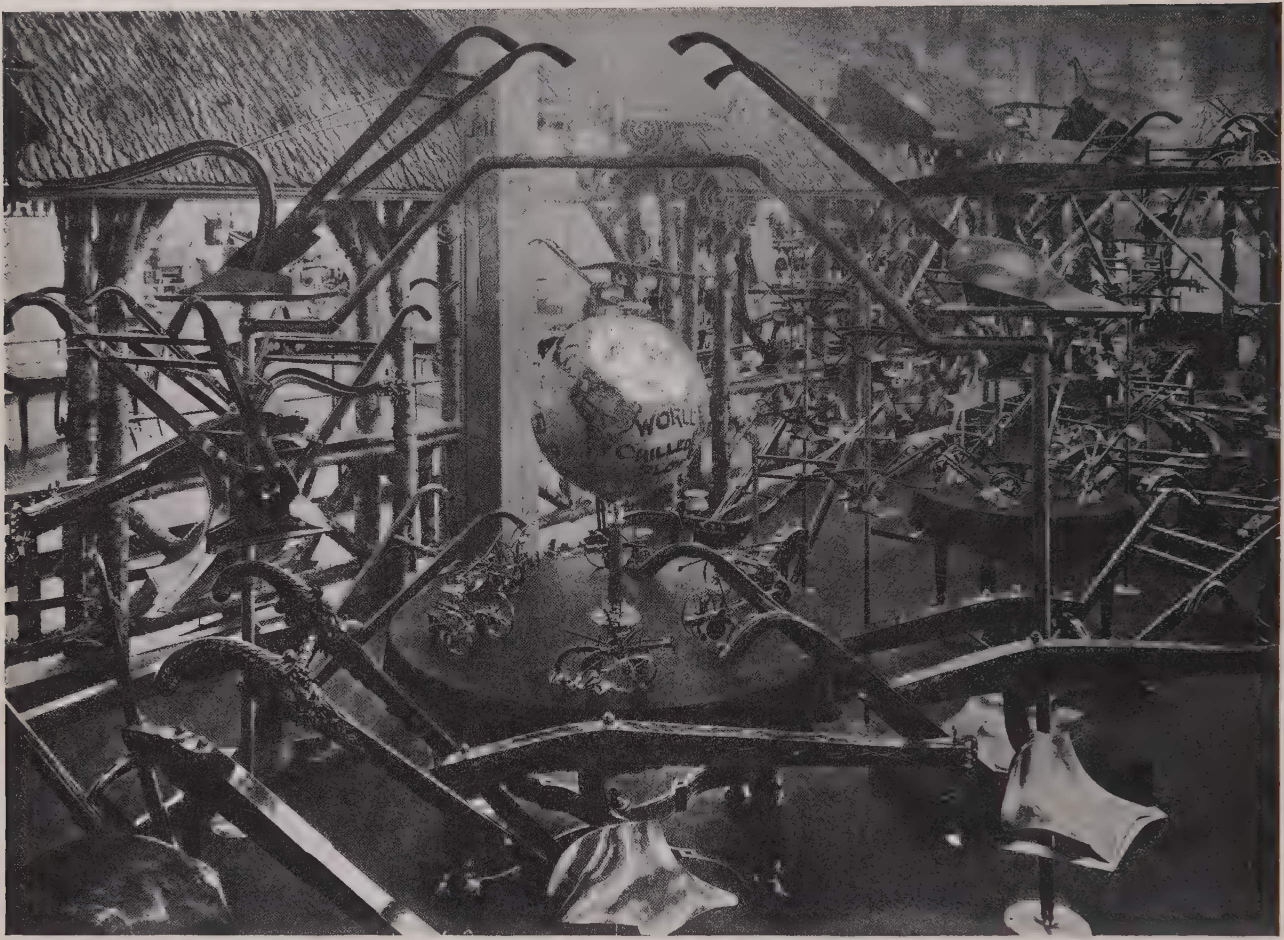
An interesting feature is the panoramic illustration of the growth of the company's business. The story is depicted upon opposite sides of a screen, one showing the old fashioned blacksmith shop in Virginia, where Cyrus H. McCormick forged the iron work for his first reaping machine, and the other the Chicago works as they appeared in 1893, with their forty acres of factories, warehouses, and yards, with trains running to and fro, and vessels



CYRUS H. McCORMICK

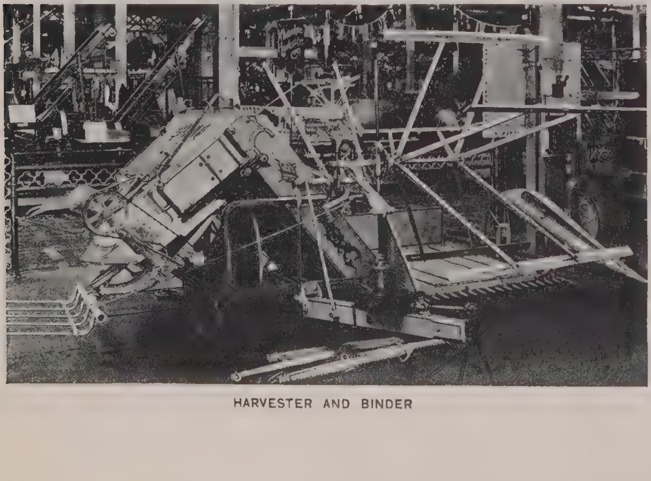


HARROWS AND PLOUGHS



PLOUGH EXHIBIT

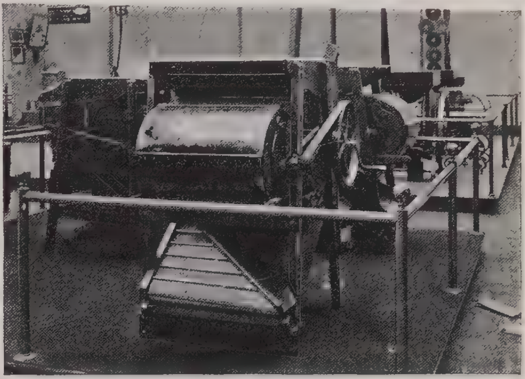
loading and unloading at the docks. Here also are the medals and other recognitions, awarded at former international expositions, beginning with the gold medal of the American institute, bestowed in 1845, and including those which were granted at the London Expositions of 1851 and 1862, the Paris Fairs of 1855, 1867, 1878, and 1889, and the Philadelphia Exposition of 1876. Especially were the merits of the McCormick reaper recognized at the London Exhibition of 1851, though still a novelty to British manufacturers and agriculturists. Even the London *Times*, which had before described it as "a cross between an Astley chariot, a wheel-barrow, and a flying machine," made amends by pronouncing it to be the most valuable article in the Exhibition, and one that of itself would almost repay its entire cost. Said the commissioner of patents in his report for 1849: "In agriculture it is, in my view, as important a labor saving device as the spinning-jenny and power loom in manufactures. It is one of those great and valuable inventions which commence a new era in the progress of improvement, and whose beneficial influence is felt in all coming time."



HARVESTER AND BINDER

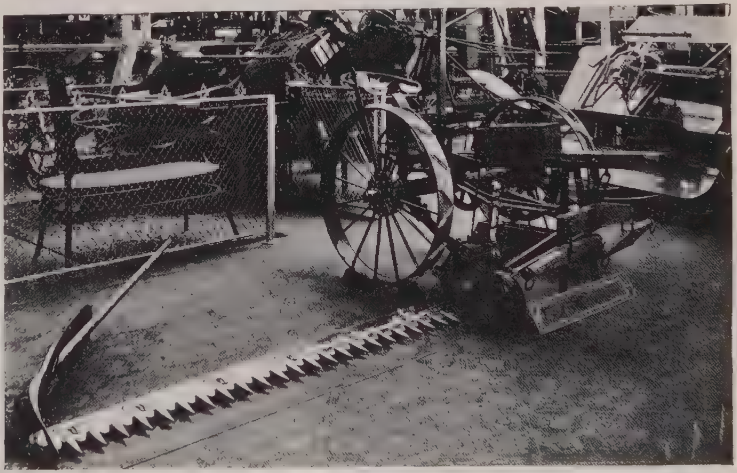
HARVESTER

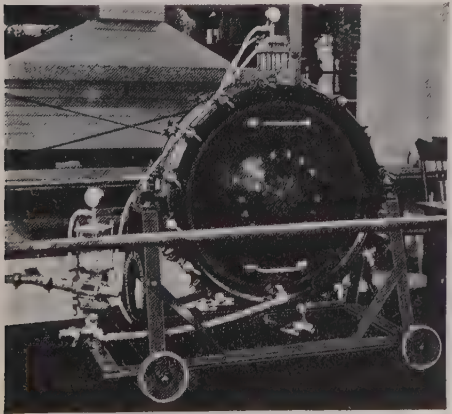
The Chicago firm of William Deering and company has a creditable display of harvesting machinery, this firm claiming to be the original makers of what are termed elevator harvesters and automatic twine binders. The Oliver Chilled Plow works of South Bend, and the Moline Plow company of Illinois have each a spacious pavilion, the central figure of the latter being a mammoth bronze statue of a Dutchman, with outspread wings, typical of its Flying Dutchman sulky plough. Other establishments have also attractive headquarters, especially those which occupy a large group of pavilions of tasteful rustic design. A Philadelphia house which manufactures garden implements, groups its specialties on a platform surrounding the equatorial line of a huge revolving globe. Here are machines for sowing the seed and fertilizing the soil simultaneously, and those which plough, hoe, cultivate, and rake at a single process. Other specialists are those which manufacture binder twine, an Auburn, New York, establishment constructing its entire pavilion of balls of this material. One of the most unique exhibits is that of the Eagle Cotton Gin company, of Bridgewater, Massachusetts, which has machinery in operation for illustrating the most improved system of freeing cotton from the seed, and preparing it for the factory. In a model of an oil mill are displayed all the processes for extracting oil from this seed, formerly thrown away as worthless, and for grinding that which remains into fertilizing materials.


FANNING MILL

OLD FASHIONED MOWER

The second floor of the Agricultural building is divided transversely by two broad apertures, or light wells as they are often called, eight minor shafts running east and west between the several galleries. Collective American exhibits largely occupy this story, and first may be mentioned those of the brewers of the United States, installed in the broad aisle which skirts the western wall. There are about thirty participants, many of them with ornate and handsomely equipped pavilions, conspicuous among which are those of the Pabst Brewing company, of Milwaukee, and the Christian Moerlein brewery, of Cincinnati. The latter, neatly decorated in cream and gold, contains an array of richly costumed figures representing historic characters of many nations, with others symbolic of the four seasons, thus advertising the general consumption of Cincinnati beer. The Milwaukee establishment has a gilded model of its plant, on a scale of one inch to the foot, enclosed in a pavilion of terra cotta, crowned with a dome in mosaic work of stained glass. The headquarters of a Detroit company are fashioned entirely of bottles, and a Rochester brewer displays in motion a model of the machinery that makes his beer.

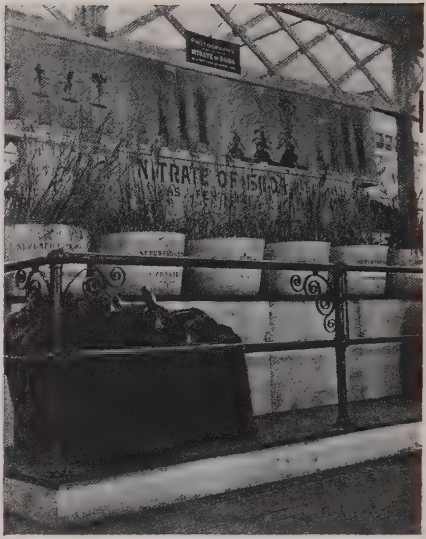

MODERN MOWER


WATER FILTER

Occupying the entire southern gallery is the display of dairy implements and appliances, ranging from the common milk-jar and butter mould to machinery worked by steam, for the making of butter and cheese,

WINDMILL OF SALT

There are also many varieties of salt, the pavilion of a Genesee company showing in three large cases the grades best adapted to the manufacture of butter and cheese, with such as serve for table use. It is no secret that dairies use various preparations for hastening the curdling of cream, and giving color to cheese and butter. By a Copenhagen factory, with a branch at Little Falls, New York, are exhibited extracts and ferments for ripening cream, chemical coloring matters, and a collection of similar articles. In the centre of its pavilion is a large glass frame, containing the medals and prizes awarded at former expositions.



FERTILIZERS

In the eastern gallery the state commissions and bee-keepers' associations have arranged an exhibit of honey and honey-comb in many forms, together with the most improved and recent apparatus used by apiarists. The exhibits of honey, whether in the comb or otherwise, are classified according to the food of the bees, including clover and basswood, white sage, buckwheat, and other varieties. Ten of the mid-continental and Pacific states, together with the province of Ontario, occupy sections in this group. New York has a collection of comb-honey weighing nearly 100 pounds, the product of a single colony at Attica. In the Nebraska case are specimens of finished workmanship in wax, in the form of cupids, angels, flowers, and fruits. Granulated honey and straw bee-hives are features in the Minnesota exhibit, and Illinois has a model of a house made entirely of wax.

Adjacent to this section, enclosed by a bamboo railing, are several Javanese huts, on the walls of which, or forming a part of them, are native musical instruments, fashioned, as are the former, of bamboo. Rice and other grains, with coffee and tea, are here displayed, the last varying in color from light green to black. There are also Batavian hats of all grades, with swords and daggers, violins, and models of a native bullock cart and of one of the suspension bridges, in the building of which across deep chasms the Javanese show remarkable ingenuity. At the back of the booth hangs a large painting representing a village such as is reproduced on the Plaisance, and with extensive rice fields stretching far away toward the horizon. It is a cheerful, sunny scene, painted by a Javanese chief, who, though he never received instruction in art, was rewarded with a place of honor in this locality.

EXHIBIT OF SOAP

In the north gallery, west of the dome, are cases filled with domestic wools from nearly a score of states. Ohio and Wisconsin occupy entire sections with their numerous grades, fine and coarse, long and short, combing and pulled, washed, scoured, and unwashed. A Philadelphia house has an extensive display of foreign varieties, and near by New Zealand exhibits her wealth of animal fibre.

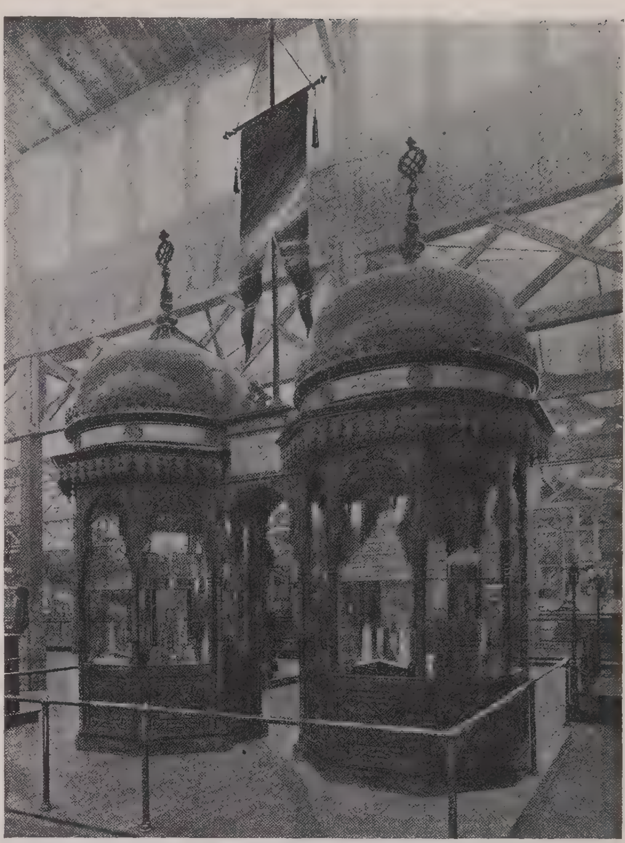
CANE SUGAR IN GLASSES

Between the east gallery and the central court, are exhibits of flour, and such food products as canned vegetables and meats, coffee, olives, apple butter, plum puddings, soups, starch, baking powder, yeast cakes, and oats, corn-meal, and buckwheat, in the form of food preparations, together with soaps and fertilizers whose bases are potash and soda. The most extensive display in the line of cereals is by a New York factory, in whose pavilion comely damsels in Quaker costume serve cakes made of the company's preparations from Quaker oats. Another manufacturer advertises his business in the form of a rustic hut, constructed of gilded cocoa-nuts, while a soap maker erects a pyramid of his special products on a thirteen sided base, representing the original

CASTLE MADE OF TOBACCO

states, and above it a statue in soap of the woman who, as is said, was the first to fashion the stars and stripes in the form of the national emblem. Beyond is a section containing a series of photographs representing growing plants, with a row of vases containing vegetable life itself in all stages of growth, a case of crude nitrate of soda from Chile, and various fertilizers whose base consists of that compound.

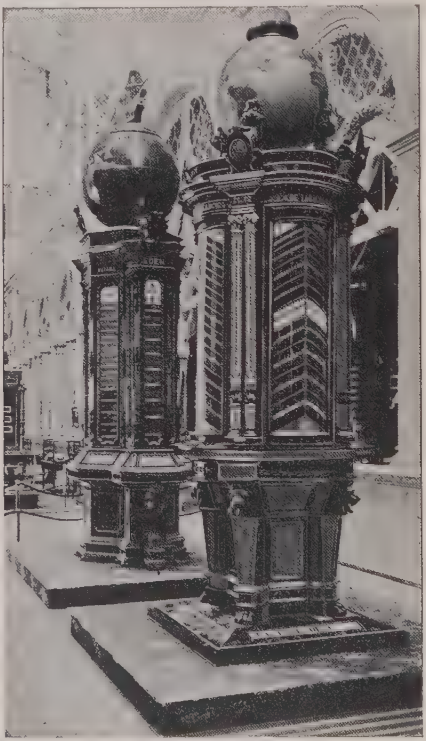
In the southeastern gallery is an exhibit of the milling industries of the west, a Minneapolis company showing models of its mills, and a Duluth firm housing its miniature machinery, illustrative of the modern roller process, in a tiny mill with an old creaking wooden water wheel, the latter an exact reproduction of a factory built near Reading, Pennsylvania, a century and a half ago, and still operated by a descendant of the original owners.



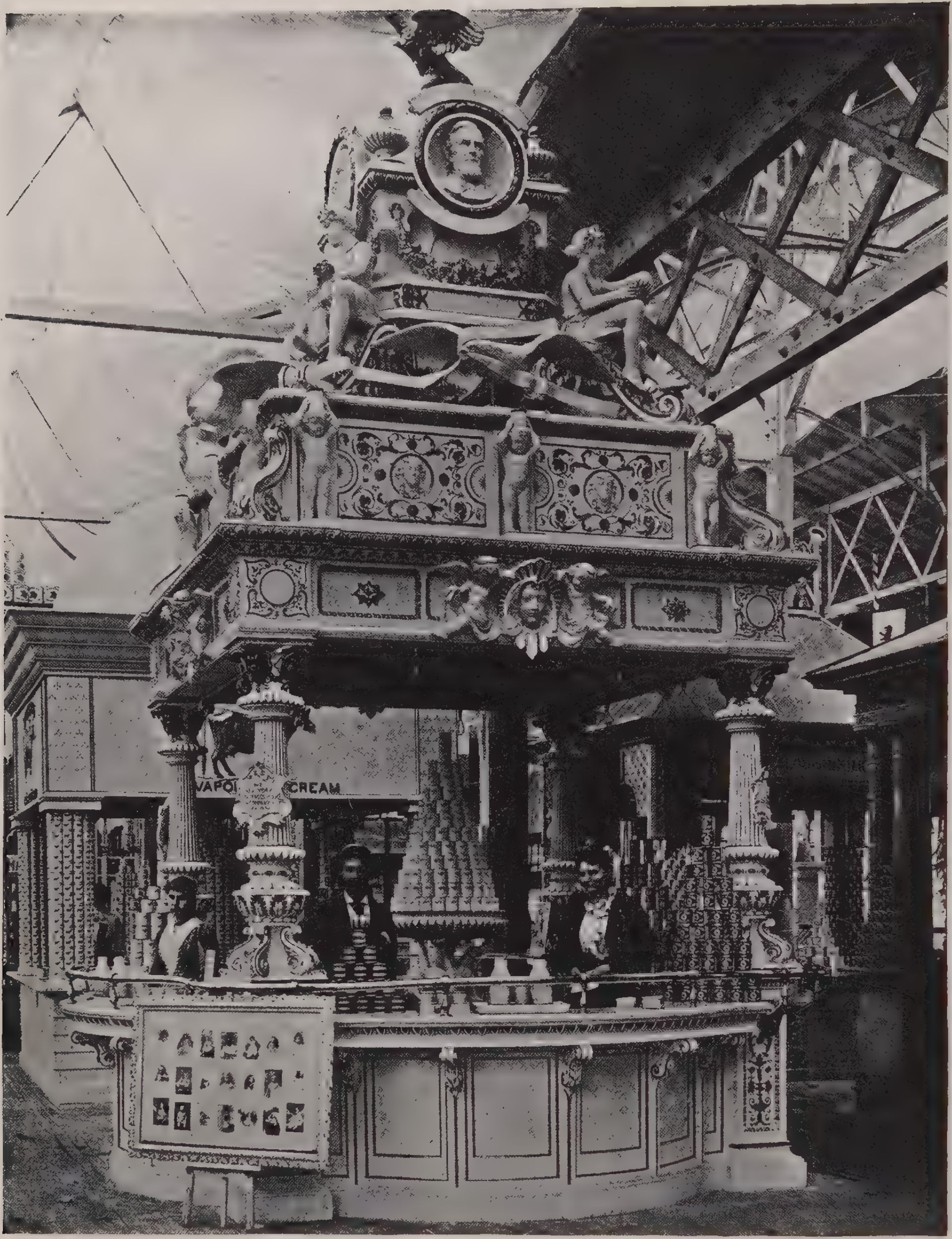
EGYPTIAN TOBACCO EXHIBIT

The western division of the gallery is largely occupied with preparations of food and drink, comprising such articles as condensed milk, evaporated cream, chocolate, cocoa, syrups, confections, macaroni, vermicelli, starch, mineral waters, cider, rum, brandy, liqueurs, and bitters, together with crackers and biscuits, cigars, leaf tobacco, and spices. Of the exhibits of condensed milk the most prominent is that of the New York Condensed Milk company, whose first works were established at Wolcottville, Connecticut, in 1856, by Gail Borden, president of the company until his death in 1874. For the products of this company, of which H. Lee Borden, the son of its founder, is now the president, it is claimed that they stand the test of all climates, and have been used in many lands for hundreds of thousands of children. The total quantity of milk thus treated in 1892 by various establishments in the United States was 400,000,000 gallons, and far the largest among them is the one referred to. The preserved milk, also prepared by this company, and largely supplied to the army during the civil war

TABLE CONDIMENTS



CUBAN CIGARS



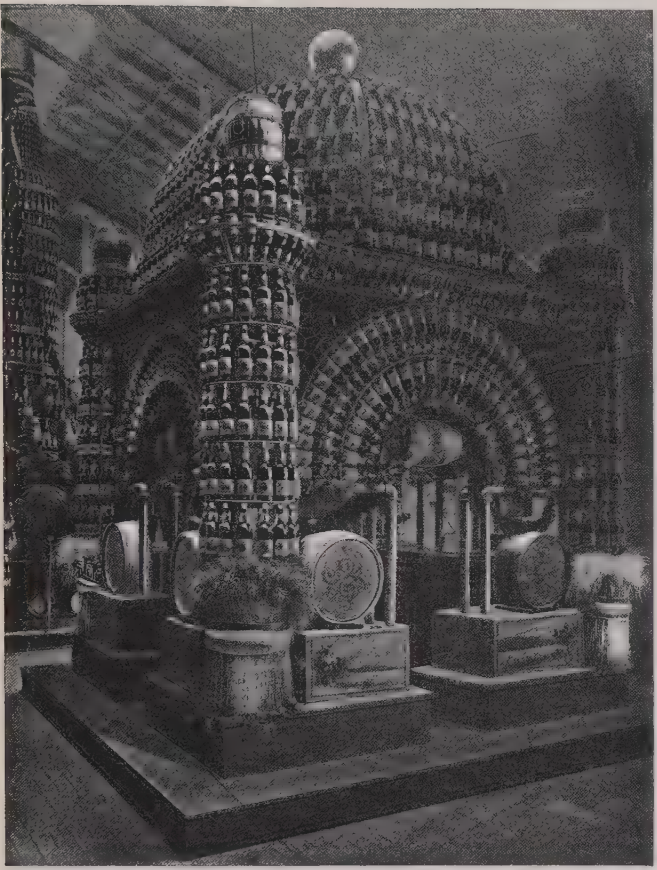
CONDENSED MILK

is condensed by a similar method, preserved with sugar, and hermetically sealed in cans.

In the collection of mineral waters nearly all the states are represented, showing how generally such beverages are coming into use. In a large and handsome booth a New York confectioner, whose specialty is the manufacture of chocolate bon-bons, has modelled from that material heroic statues of Columbus, Venus de Milo, and Minerva. A starch company of Oswego, New York, reproduces a Grecian temple in cream, gold, and light green, whose pillars and cornices are elaborately carved by hand from solid blocks of wood. Several eastern manufacturers of crackers and biscuit have neat and tasteful pavilions, while many of the cigars and tobacco booths are of unique design, an Egyptian exhibitor advertising his wares in a temple covered with hieroglyphics, and containing miniature monoliths, pyramids, and other familiar forms of ancient architecture. There is also a pavilion built in the Corinthian style, its pillars composed of glass panels, through which may be seen varieties of smoking tobacco, while elsewhere is a case of mahogany and rosewood, filled with cigars, and surmounted by a globe, above which is the historic *Pinta*.

A New Jersey firm, which manufactures the Tiger brand of tobacco, has in the centre of its exhibit a fine mounted specimen of the man-eating species, bearing in his mouth a pail of the prepared weed. Wisconsin, Connecticut, and Massachusetts have collective specimens of leaf tobacco, Connecticut's display being confined to the variety produced from Havana seed. Adjoining the group of the New England Tobacco Growers' association is a small booth in which Honduras illustrates the variety and quality of her tobaccos, both in leaf, and in the form of cigars. Among the exhibits of spices may be mentioned that of a Chicago firm, whose dealings are largely with Penang, representing in gaudy colors an ancient Malayan temple, with sections of the allspice tree, twigs of cinnamon, and other crude forms of the products in which it deals, the raw material being scattered among a varied display of manufactured articles. Finally there is a collection of syrups, suggestive of the maple groves of Vermont and Ohio.

COCOA BOOTH



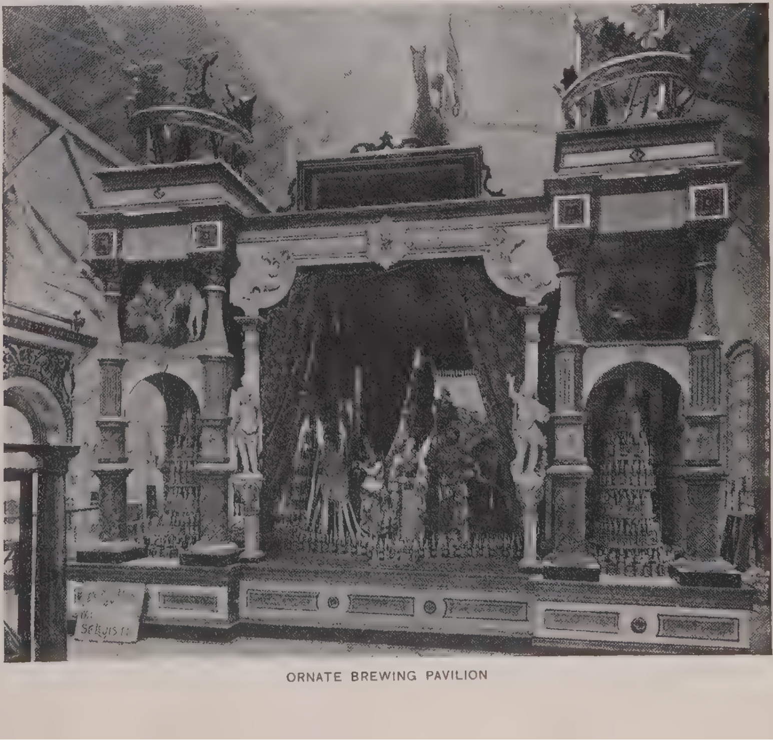
BREWING EXHIBIT

DISPLAY OF DISTILLERY PROCESS

From agriculture in its proper sense let us turn to dairy-farming, a prominent industry in nearly all sections of the United States, where are more than 16,000,000 cows, or one to every four of her inhabitants, a larger number than is contained in Great Britain, France, and Germany combined. In 1892 the dairy products of the republic included some 35,000,000 pounds of butter, worth nearly $5,000,000, with more than 100,000,000 pounds of cheese, valued at $9,000,000, this apart from what is consumed by farmers, and their families and employés, which probably represents almost an equal amount.

In the Dairy building we have one of the smallest, and yet one of the most interesting departments of the Exposition, for here is contained not only a choice and complete display of dairy products, but what has been called a dairy school, where at intervals during the term of the Fair is held a series of tests for comparing the relative merits of various breeds of cattle. Here also are displayed in actual operation the best methods of handling milk and cream, and converting them into butter and cheese.

The structure is of simple design and neat exterior, covering somewhat less than half an acre in the southeastern portion of the grounds, near the Forestry building. Besides the offices of the department, the first floor contains the sections in which many of the states show their samples of butter and cheese, the latter also abundantly displayed in the galleries. The glass cases provided for the purpose are supplied with refrigerating apparatus, the cold air pipes banked under the floors, and against the walls. These sections occupy three sides of the hall in which machinery



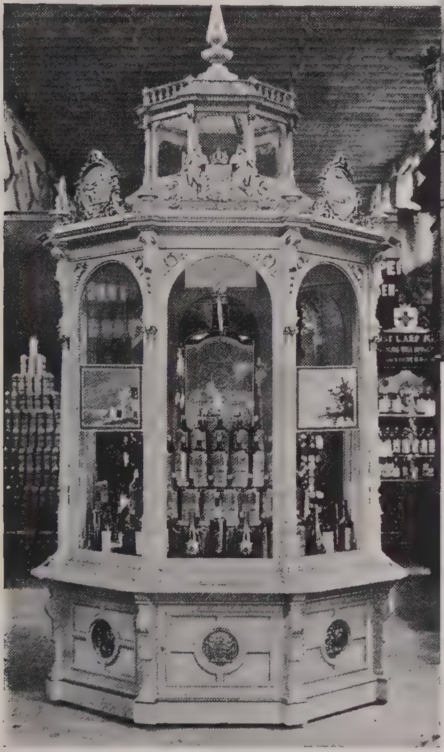
LARGE BARREL MADE OF 10,500 SMALL ONES

ORNATE BREWING PAVILION

LOOKING UP THE EAST LAGOON

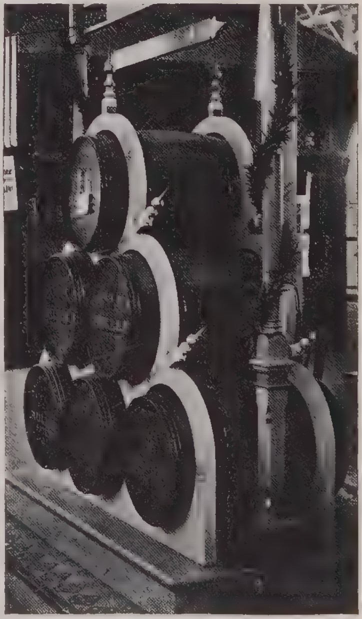
is in operation for the testing of milk and cream, and their manufacture into butter and cheese. This is known as the model dairy, and is well supplied with seats for the accommodation of spectators. Beneath are refrigerators and cold storage rooms for the preservation of dairy products. On the second floor is a café, which overlooks the lake, one of those secluded spots where the pilgrims of the Fair love to rest from their toil.

A STARCH EXHIBIT


IN THE GALLERY

At a suitable distance south of the Dairy building are sheds containing 200 cows, all of which are contesting for the honors of the dairy, together with a collection of blooded calves that form an amusing exhibit. Jerseys, Guernseys, and short-horns are the chief of the rival breeds. From the time the milk is drawn from the cow until it arrives at the model dairy it is under the watchful care of scientists connected with the test committee, and representing various agricultural colleges and experiment stations, the different herds being in charge of the breeding associations, by which they have been collected from all sections of the country.

Entering the building from the east, we find the collections of Indiana, Minnesota, and Nebraska ranged along the walls as specimens of yellow butter in plain and fancy shapes. The North Star state especially has an artistic display deftly molded in the form of flowers and fruits. Nebraska, one of the most prominent dairy states of the west, has an extensive assortment, an attractive feature being the heaps of butter globules, not yet fashioned, as elsewhere, into solid, grained masses.


PATENT FLOUR

New York, Iowa, Illinois, Ohio, Wisconsin, and Pennsylvania are also prominent in the Dairy building, though the exhibits of some of these states, with others of lesser note, were somewhat impaired by the partial failure of the refrigerating apparatus during the earlier days of the Exposition season. Moreover, on account of the contracted space available for the display of these products, the great dairy states were compelled to distribute their collections over the entire term of the Fair. Thus, as in the Livestock and Horticultural departments, no description written in the present tense would properly represent the case. Iowa, for instance, which ranks next to New York in this industry, had little to show in the month of August, while in June, September, and October scores of her creameries sent the most fragrant of their products, filling several large sections. On the other hand,

SPECIMEN EXHIBIT

OLD COCOA MILL

August showed New York and Illinois to excellent advantage, with rich saffron-yellow butter from the empire state, and cheddar and other choice brands of cheese. The Illinois exhibit was at once artistic, massive, and historic, for here were not only tubs and mounds of butter, and cheeses of generous proportions, but from Minneapolis came flowers, log huts, and mottoes of welcome, fashioned of the more plastic material, while an Elgin farmer sent the can used for the first shipment of milk to Chicago by rail in 1852. In August a strong feature of the exhibit was a select lot of Dutch cheeses from Rotterdam, and at that time Missouri and New Hampshire were well represented both in butter and cheese.

In opposite galleries of the Dairy building are small French and German exhibits, the former consisting mainly of a few cheeses, labelled genuine Roquefort, and samples of prepared milk for infants, almost identical, as is claimed, with that which nature produces, the preparation being contributed by a society which supplies the hospitals of Paris. A similar exhibit was made in the German section by a Mecklenburg company, where also Berlin inventors show milk in bottles and in concentrated form, with the apparatus by which they exclude the air and expel gases, thus effectually destroying the germs of disease. Here for the first time this invention has been publicly exhibited in the United States, where, as is asserted, it would largely aid in the development of dairy industries, since by its use milk can be kept in good condition and in unlimited quantity, ready to be forwarded from remote regions to the great centres of consumption. Iowa, Michigan, New York, and Wisconsin have all a considerable space in the galleries, stocked with cheeses.

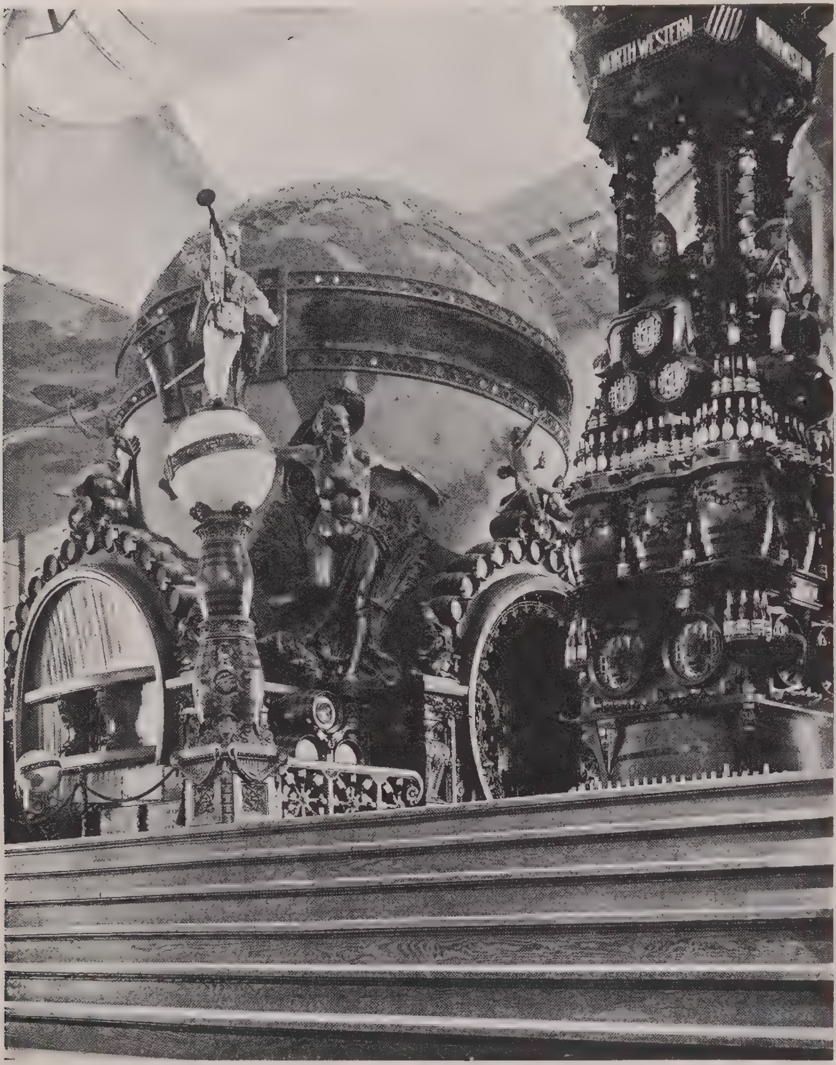
CHOCOLATE PAVILION

A MOONSHINER'S CABIN

The series of experiments and tests conducted during the term of the Exposition were watched by dairymen from every part of the world. In the first ten days of May were illustrated the best methods of handling milk and cream, followed by tests of Jerseys, Guernseys, and short-horns as to the comparative value of breeds for the production of cheese, which is manufactured by machinery in the model dairy. In the closing days of May the apparatus for cheese making was replaced by such as is used for butter, with additional illustrations of modern processes for handling milk and cream. From the last of May to the close of August were compared the relative values of dairy breeds as producers of butter, with the nutritive qualities of skim milk and buttermilk, and the increase or decrease of live weight. In the following month the contest was as to butter alone, and in October there were still further illustrations of the various methods of treating milk and cream, and of butter making, with examples of what could be done with young herds in this connection. In these experiments were represented several cattle clubs and associations which concern themselves mainly with blooded grades of stock, the Exposition management furnishing quarters and feed, and retaining the produce of the model dairy.

THE BREWERS' PAVILIONS

For the cheese test between Jerseys, Guernseys, and short-horns, twenty-five cows were selected to represent each of these breeds, the American Jersey cattle club of New York gathering its choicest specimens from no less than



DISPLAY OF WESTERN BREWERS

twenty states, and 30,000 thoroughbred animals. Among the exhibitors of Jerseys were Theodore A. Havemeyer, of New Jersey, and John Boyd, of Illinois, while Levi P. Morton sent some of his Guernseys, and in all the three breeds were many former prize winners. For several weeks before the cheese test in May, animals of each class were placed in the sheds south of the Dairy building, and from their milking records the contestants were selected. Thus it was that the Jersey milch cow, Signal's Lily Flag, valued at $15,000, and considered the queen of her race, was not permitted to enter the lists, for though with a record of more than 1,000 pounds of butter a year, at her preliminary trial she failed to meet the expectations of her admirers. Nevertheless the result was a decided victory for the Jerseys, the herd producing during the fortnight of the test more than 13,290 pounds of milk and 1,450 of cheese, against 10,900 and 1,130 pounds respectively for the Guernseys, and 12,180 and 1,070, for the shorthorns. The highest award for cheese-making was for a Jersey cow named Ida's Marigold, the property of a Buffalo bank president. As an outcome of the test, it was found that Guernseys produced cheese at smaller cost than the others.

Of the exhibits contained in the Forestry building, though officially classed with the department of Agriculture, mention will be made elsewhere in this work, in connection with the Horticultural display.

World's Fair Miscellany.—Exposition wits tell many amusing stories of the crowds which surge toward the galleries of Agricultural hall as the lunch hour approaches, as it is generally known that a number of exhibitors distribute their specialties in food and drink for advertising purposes. A cereal company, for instance, serves out biscuits; another, cakes; a third draws root beer for the thirsty; a fourth dispenses beef extract; a fifth, a dish of gelatine, thus permitting the needy to enjoy a gratuitous bill of fare. Among the jokes that passed current as to distinguished visitors was one concerning Edison, the great electrician, who, it is said, being lost for hours to his friends during a visit to the Fair, was finally discovered in one of these galleries eagerly devouring a large pancake spread with jelly.

In the Pennsylvania section, opposite the old-fashioned fireplace mentioned in the text, is an arm-chair with heavy wooden frame covered with corn-stalk, of which, it is said, 3,000 pieces were used, the stalks being cut in thin, narrow strips, and with ornamental designs. In the chimney corners are sprays of evergreens, with birds perched among the branches. What is the exact meaning of this fireside group of feathered songsters is not explained; but, as in love and war, everything is permissible at the World's Fair.

During the term of the Fair, vegetables in season and other perishable articles would be admitted, and, when necessary, might be replaced with fresh specimens under permit from the chief of the department, who reserved the right to remove such exhibits as were not properly cared for. In September there would be a special display of potatoes and other tuberous food-plants, and in October one of sugar-beets.

With exhibits of farm products must be forwarded, among other items, information as to the character of soil, the date of planting and harvesting, the mode of cultivation, the yield per acre, the price at the nearest home market, and the average temperature and rainfall

EXHIBIT OF MEAT PRODUCTS

between the time of planting and gathering the crop. For other branches of this department similar regulations were framed.

Dairy products would be received only between the 1st and 10th of June, July, October, and November. In making awards prominence would be given to the flavor of butter, for which would be accredited a maximum of 45 per cent, with 25 per cent for texture, 15 for color, 10 for salting, and 5 per cent for packing. So with exhibits of cheese, except for slight variations. The display of butter includes ordinary and fancy brands, with creamery descriptions, one package only to each exhibit, and of specified weight. Exhibitors of cheese were restricted to a single specimen, limited as to weight and size. American and Canadian articles must be made of full new milk, and were generally classed as cheddars, flats, young Americas, domestic Swiss, brick, and dairy, others being subject to special regulations at the discretion of the chief of department.

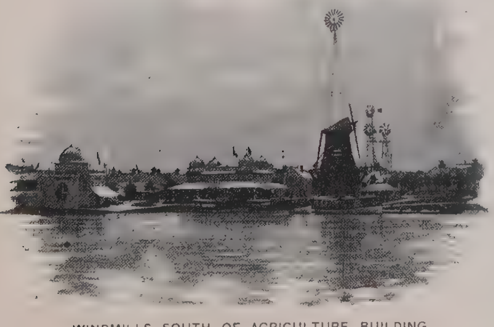
STATUARY ON AGRICULTURE BUILDING

To provide for a uniform and sightly display of honey and beeswax were provided the glass cases mentioned in the text at the joint expense of state commissions, bee-keepers' associations, and individuals, in proportion to the space occupied by each. Specimens of comb honey must not exceed 100 pounds, and of extracted honey and beeswax each 50 pounds. Exhibits were also invited of domestic and foreign bee culture, whether by ancient or modern appliances.

Exhibits of wool were classified as pure-bred fine, pure-bred middle, pure-bred long, and cross-bred descriptions. Entries must consist of a single fleece as taken from the sheep in its natural condition, displays of Cashmere, Angora, Alpaca and Vicuna wools being subject to the same regulations as the rest.

Among the artistic phases of the agricultural display mention should be made of the miniature models of domestic animals in one of the galleries, the originals of which were copies from life by Max Landsberg. Horses, donkeys, mules, cattle, sheep and swine, are all moulded and painted in natural colors, and with marvellous fidelity of delineation. The originals are the property of the Imperial Agricultural university of Berlin.

Not far from the shore of the south pond is a miniature house surrounded by a broad veranda, and near it a plat of ground has been laid out in sections showing strata of crushed stone, soil, macadam, and other substances, arranged in regular layers. This is the exhibit of the National league of good roads, a young organization, but one in which substantial merchants, farmers, and others are largely interested, their efforts to secure better country roads meeting with favorable consideration from the United States department of agriculture. It was at first proposed to build a model road 1,000 feet in length, from the Forestry building to the Live-stock pavilion, but this project was abandoned in favor of the more condensed exhibit around the league's pavilion. Here sections of road are shown whose beds, varying in thickness, are constructed of macadam covered with fine stone and sand, and those whose principal material is stone. Highways are also arranged in forms best suited for wet and dry lands, for clayey or sandy soils.

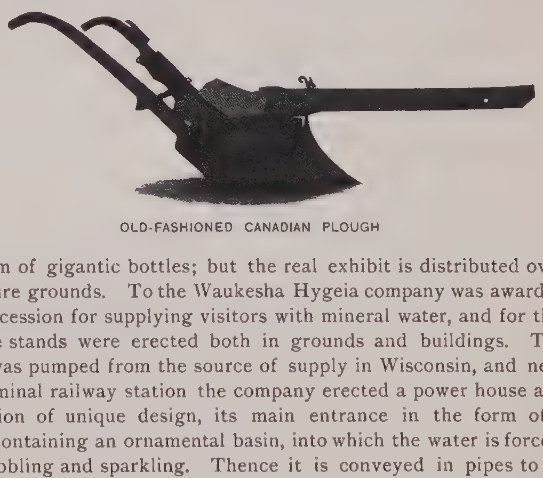


WINDMILLS SOUTH OF AGRICULTURE BUILDING

By several firms to whom were granted concessions to sell confections and beverages upon the grounds, ornate pavilions were erected. Among the most elegant is that of the Lowney company, of Boston, manufacturers of chocolate bonbons, whose structure is near the Manufactures building, while the most unique is that of the Blooker cocoa company, a quaint reproduction of an ancient Amsterdam mill, located on the shore of the south pond. It was during the early portion of the present century that two brothers of the Blooker family established this business, the windmill now represented at the Fair then grinding the cocoa beans into the product which has since acquired an excellent reputation. Adjoining the mill, or rather forming a portion of it, is a Dutch house of the old style, built and furnished to illustrate the surroundings of a burgher of moderate means, and refined tastes. The furniture and pottery are essentially Dutch, and of superior quality, and there are girls who serve the cocoa dressed in the national costumes of the Netherlands as worn in early days. Very noticeable, also, among the chocolate booths is that of Menier, the French manufacturer, which, in its dress of white and gold, stands south of the entrance to the Mines and Mining building, and within the court of honor.

A picturesque display in connection with the Agricultural department is the collective exhibit of windmills, mainly by Illinois, Iowa, Ohio, Indiana, and Michigan factories, and grouped around the shores of the south pond, between the intramural road and the buildings of the French colonies.

Among the larger collections of mineral waters in the galleries of the main hall are those from Waukesha, Wisconsin, arranged in the form of gigantic bottles; but the real exhibit is distributed over the entire grounds. To the Waukesha Hygeia company was awarded the concession for supplying visitors with mineral water, and for this purpose stands were erected both in grounds and buildings. The water was pumped from the source of supply in Wisconsin, and near the terminal railway station the company erected a power house and a pavilion of unique design, its main entrance in the form of a court, containing an ornamental basin, into which the water is forced, still bubbling and sparkling. Thence it is conveyed in pipes to its many points of distribution, and sold at the rate of one cent a glass.



OLD-FASHIONED CANADIAN PLOUGH

In the rear of the Anthropological building are two unique exhibits by Louisville manufacturers of whiskies, each of whom claims to produce the real old-fashioned article by modern methods. One of these firms has erected a log hut, or moonshiner's cabin, with imitation mud plaster between its timbers, and with pieces of glass or crockery inserted as ornamental features. Inside, however, the parallel is not faithfully developed. Floors and walls are of the finest wood, and sour mash and rye are displayed in most seductive forms. The so-called Old Times distillery company has a commodious two-story distillery in actual operation, with bonded warehouse, and a United States gauger's office within. Whiskies labelled Old Times, Kentucky Comfort, Gladstone, and others, are exhibited in the room containing the stills. On a placard prominently displayed the visitor is warned not to ask too many questions on pain of having some of them unanswered.

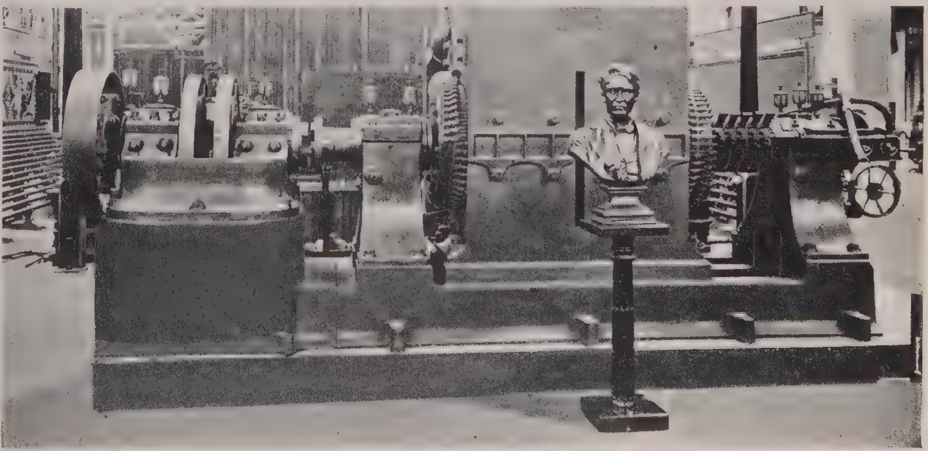
ILLUMINATION OF THE COURT OF HONOR

CHAPTER THE FOURTEENTH

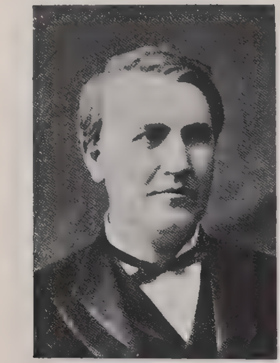
ELECTRICITY

ALLUDING to the huge manufacturing systems of Great Britain, her innumerable railroads and her ubiquitous marine, it was remarked by Emerson that steam is the half of an Englishman. If this be so, it may be said with equal truth that electricity is the half of an American, for while the earlier discoveries in electric science were made in other lands, no nation has displayed such aptness and ingenuity in adapting them to practical use. Here the patient and ill requited toil of Samuel Morse has fructified into a network of telegraph lines, which carry the tidings of the world with the swiftness of thought to every section of the republic; here was conceived the plan for the first of our submarine cables, and here was invented the telephone, by means of which many millions of spoken words are carried daily over the wires. And so with apparatus for lighting, motion, the transmission of power, and other purposes, our electric lamps and dynamos, our motors and cars being now exported to every quarter of the earth.

And yet to-day we know no more of what electricity is than did Theophrastus or the elder Pliny, both of whom speak of the property of amber for attracting such light substances as straws and leaves. We have learned that it is not a fluid, as was formerly supposed, that it is not matter, any more than are light and heat; but when we say that it is a force, or rather the cause of a force, we have said about all that has thus far been discovered as to this the most puissant of nature's potencies. It is not until recent years that electric power has been applied to practical purposes apart from the telegraph, or indeed was supposed to be capable of such application. In 1882, for instance, was opened the first central station for lighting streets and buildings; in 1893 there were nearly 1,300 stations with 2,500,000 lamps. In 1881 the first isolated plant was erected on the shore of Blue Mountain lake; in 1893 there were 3,500 isolated plants with 1,443,000 lights. In 1885 was built the first electric railway, with its mile or two of track;



EDISON'S APPARATUS



THOMAS A. EDISON

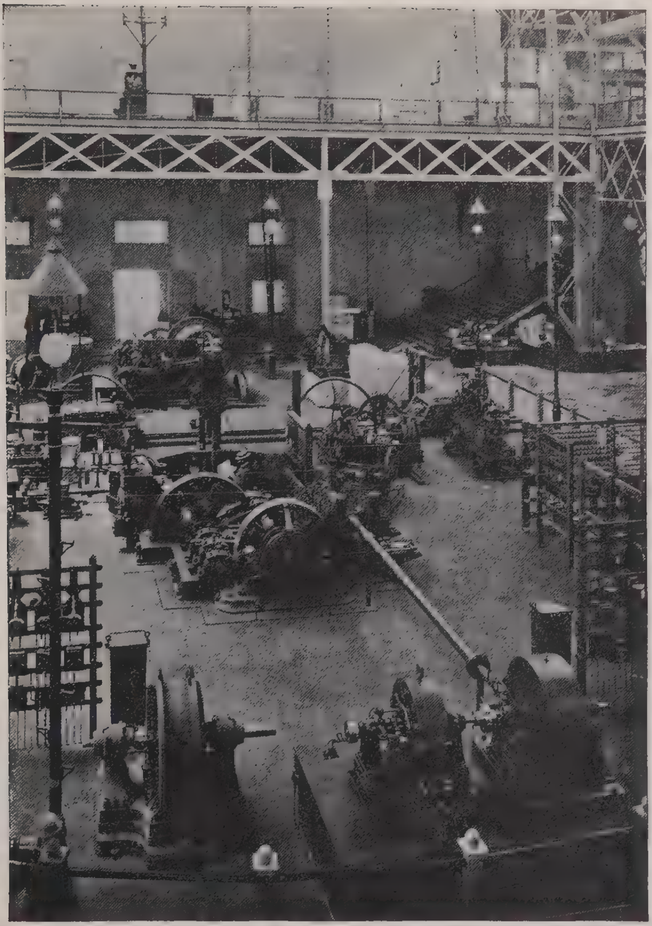
in 1893 there were 435 electric railways in operation, with 5,000 miles of track and 8,500 motor cars. In many steamship lines on ocean, lake, and river vessels are lighted by electricity, while in warfare, in mining, metallurgy, mechanics, and in the transmission of power for various purposes, it is rapidly coming into use. All this is fully illustrated at the Fair, where electricity is almost ubiquitous, for there is hardly a corner of the buildings or grounds where its agency is not manifest in one form or another.

To the majority of Exposition sight-seers the most attractive feature in connection with the department of Electricity is the illumination of grounds and buildings, of fountains and waterways, forming, with the play of search-lights, a more striking illustration of the wonders wrought by this science than any mere collection of machinery could possibly be. The decorative lighting of the grounds is concentrated chiefly on the main plaza, the shore line of the central basin, its border of flower beds, and the cornice lines of the buildings rising to a uniform height above the court. The outer surface of the Administration building, with its dome and corona, are also traced in lines of light. Elsewhere exterior illumination is restricted to the Wooded island, to loggias and colonnades, to Festival hall and the terminal railway station.

As to interior illumination, the following description by the chief of the department may be of interest:

LOOKING SOUTH FROM CENTRE OF HALL

"The two problems of lighting, by far the most difficult presented, have been the lighting of the Art galleries, with their two miles of reflecting screens, and the lighting of the dome of the Administration building, which is larger by far than the dome of the capitol at Washington. On the floor of this dome, which is octagonal, there are in the eight angles as many great spreading candelabra of special and beautiful design, each bearing 50 lamps. High up, at the spring of the interior dome, is a gallery running clear around it. The gallery has a metal railing, and upon this railing are 56 seven-light standards, forming a great corona of light 120 feet in diameter. Far up above, and through the opening in the top of the false dome, is seen the beautiful painting upon the ceiling of the outer dome, as illuminated by a circle of arc lights which are themselves hidden from view between the two domes.



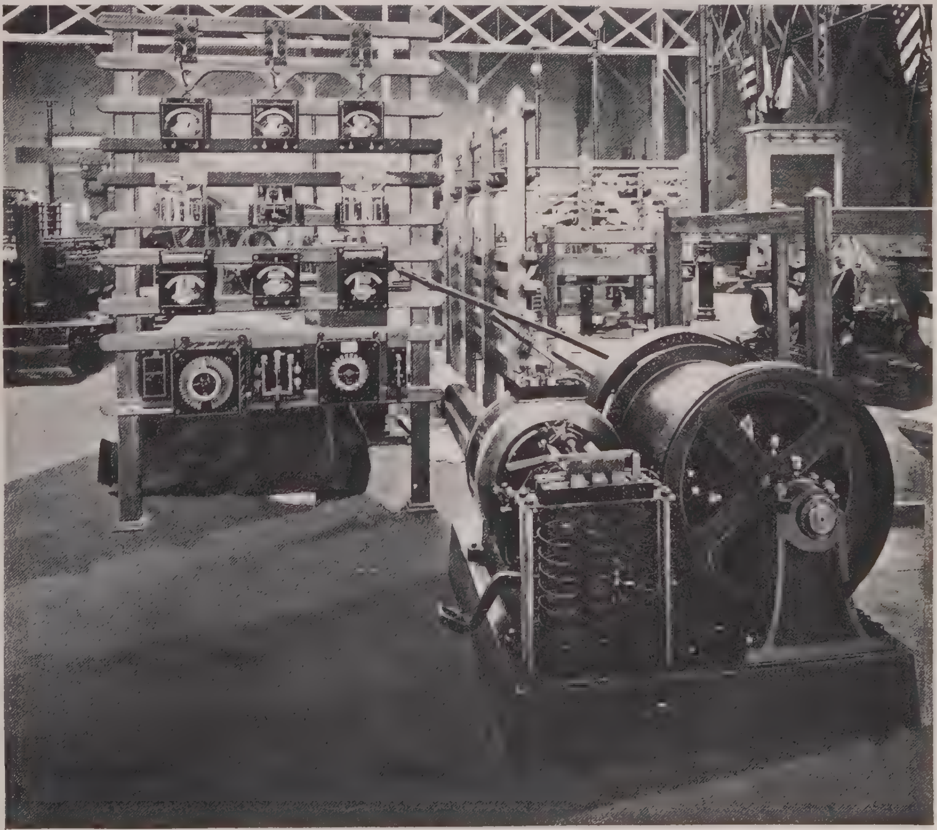
VIEW IN ELECTRICITY HALL

"An effective piece of lighting appears in the Fisheries building. The large circular pavilion upon the east is used as an aquarium. Around the building are arranged continuous concentric rows of great tanks. The sides of these tanks are of clear glass, and are continued in the ceiling by stained glass screens, so that the observer walks in a covered corridor the sides of which are of glass, and through which can be seen the representatives of all the finny tribes disporting themselves in their native element. No lights are visible; but the tanks are lighted by hundreds of incandescent lamps placed under screens above the tanks, so that the light does not strike the eye, but is diffused throughout the water, which is illumined as effectively as at noonday."

In the illuminated city of the Fair the attraction is not in the myriads of arc and incandescent lamps, with their elaborate settings, nor in the circular electroliers, some of them suspended, as in the hall of Manufactures, 150 feet above ground. Rather is it the part that each one plays in the general effect, the special feature that its light accentuates, all contributing to give to this wondrous display the aspect of a veritable fairyland, to raise it, for the moment, almost beyond the realm of matter.

Let us imagine ourselves standing at eventide in the central court, now almost a solitude, haunted by the shadows of deserted temples cast athwart the plaza. Toward the east darkness is settling over the waters of the lake. Northward and to the west a heavy pall of smoke broods over the great midcontinent metropolis, and far to the south the lurid flames of a blast furnace are faintly visible on the dusky horizon. Suddenly a beam of light shoots like a falling star from the lofty dome of the Administration building, and a moment later its symmetrical outlines stand out in tracery of fire. At its base is a circling wheel of light, and a hundred torches further relieve the black abyss beyond. Meanwhile a thousand lamps, clustered around the central avenue, have turned the night into day. Thus also the other great buildings that encircle the court assume their robes of light, with pillars, porticos, and colonnades blending in weird, yet brilliant perspective, like the threshold of an enchanted palace.

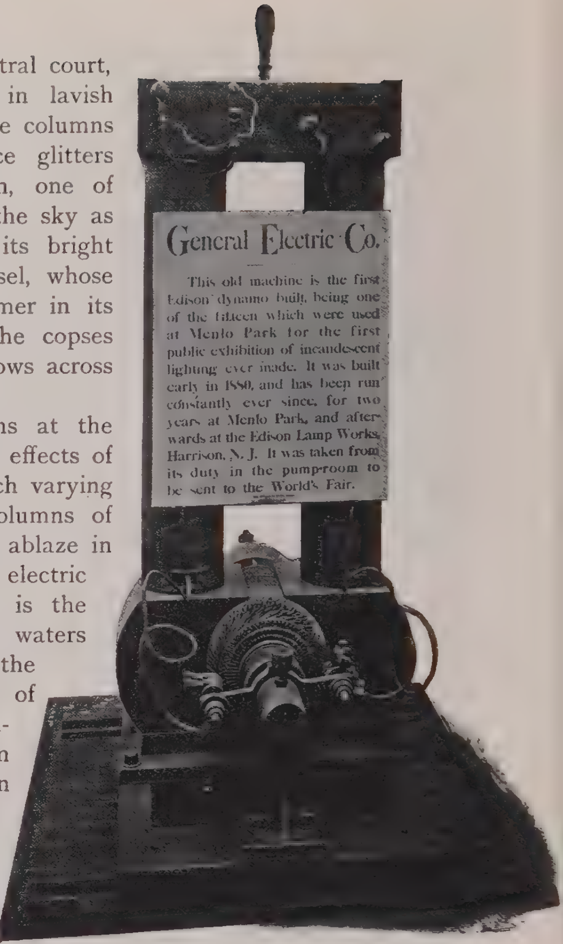
From the summit of the Manufactures building a pyramid of dazzling light is cast on the dome of the Administration building, throwing into strong relief its delicate tracery of gold and white. Then in swiftly changing streams of white, green, and blue, purple,



GROUP OF EDISON MACHINES

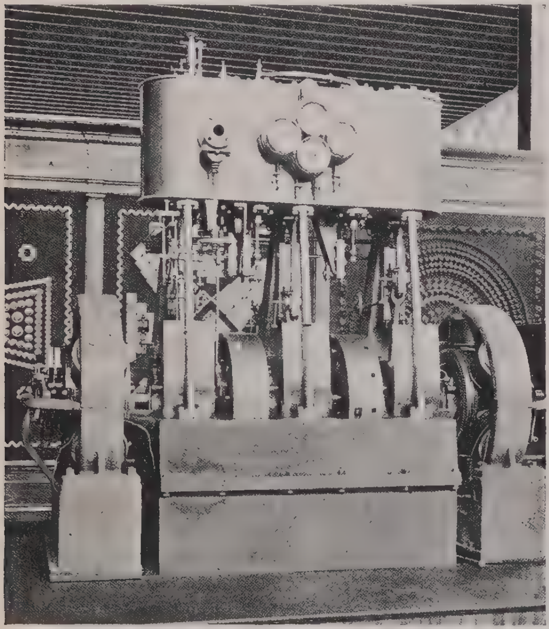
yellow and scarlet, three search-lights are turned simultaneously on the central court, the basin, the MacMonnies fountain, and the statuary here displayed in lavish profusion. In the heroic statue of the republic, with its background of double columns shining like pillars of Carrara marble, every inch of its golden surface glitters beneath the piercing rays. Presently the search-lights sweep the horizon, one of them resting for a moment on the graceful figure of Diana, poised against the sky as though suspended in mid air. Another is turned toward the lake, casting its bright sheen on the waters of Michigan, and striking the sails of a passing vessel, whose white wings slowly vanish from sight. Gradually the scene grows warmer in its wealth of coloring, and the lights and shades more intense in contrast, the copses and groves of wooded island, with its garb of verdure, throwing their shadows across the tracery of fire.

But the climax of all this brilliant display is in the electric fountains at the head of the lagoon in front of the Administration building. Here are light effects of surpassing loveliness, in rich varying hues, sprays, jets, and columns of water appearing as though ablaze in the glow of these powerful electric currents. Between them is the MacMonnies fountain, its waters iridescent as the rainbow, the centre-piece with its group of figures resembling a phantom ship with phantom crew, beautiful but with an unearthly beauty. Under these changing colors the vessel seems to float, now on a sea of white, and again on a rose-colored expanse, on frosted silver or on molten gold. Near by gondolas and electric launches speed swiftly to and fro across the lagoon, breaking its resplendent surface into a thousand glittering fragments, while from the plaza strains of music are wafted into the still night air, and above all is heard the ceaseless murmur of the waves, breaking on the shore adjacent, as with the low sad monotone of ocean.



General Electric Co.

This old machine is the first Edison dynamo built, being one of the fifteen which were used at Menlo Park for the first public exhibition of incandescent lighting ever made. It was built early in 1880, and has been run constantly ever since, for two years at Menlo Park, and afterwards at the Edison Lamp Works, Harrison, N. J. It was taken from its duty in the pump-room to be sent to the World's Fair.



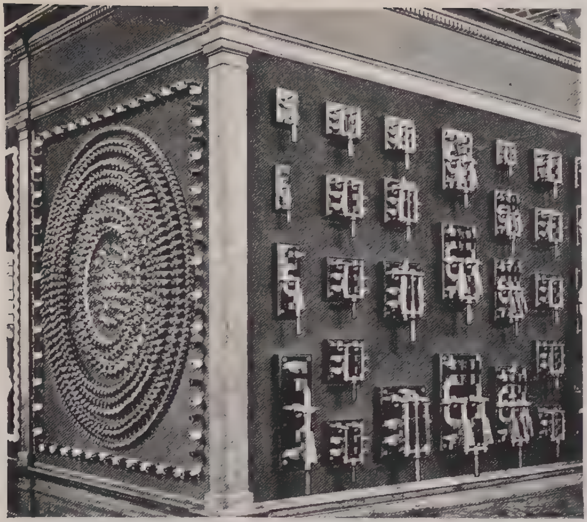
MULTIPLEX GENERATOR

Such is the entertainment offered by night at the Fair, but on no two nights alike, presenting a new combination of brilliant effects at each illumination, and varied at times with fire-works, the latter, as it would appear, somewhat out of place amid this marvellous scenic display, and more than once threatening serious disaster to the Exposition buildings and their rich contents. No wonder that these artistic glories of the night, surpassing even the spectacular marvels of the day, brought visitors to the grounds by scores of thousands, and to the management a goodly increase of revenue. Under the glow of myriads of lamps the architectural symmetry of the design is displayed to excellent advantage, the uniform cornice level of the buildings, sixty feet above ground, standing clearly forth in tracery of incandescent lights, while encircling the basin near its water level an unbroken circle of vari-colored jets, each reflected from its glittering surface, gives to the scene a brilliance almost too dazzling for human eye to rest upon.

From this brief description of the Fair by night let us turn to the exhibits proper of the department of Electricity, for here also are many attractions for every class of visitors. While some portions of the Exposition are largely occupied with technical collections, such as are of special interest only to those with whose business or studies they are connected, here is one that represents the greatest and yet the youngest and most progressive of the sciences, one whose marvels, though surpassing the wonders of dreamland, are presently to be excelled by others yet in store.

Passing from the railway station along the northern side of the central court, the visitor will observe in the spacious portico of a building on his left, a colossal statue mounted on

WIRING APPARATUS



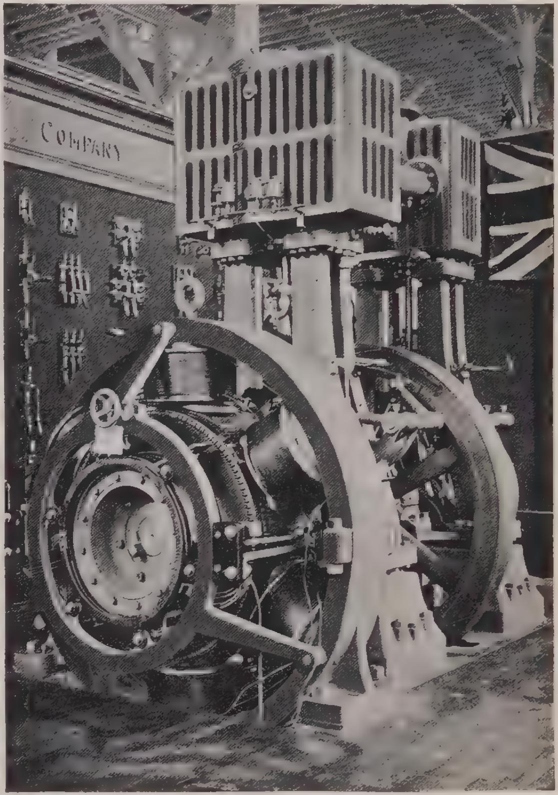
INCANDESCENT APPARATUS

a pedestal, and on the frieze above it the following inscription:

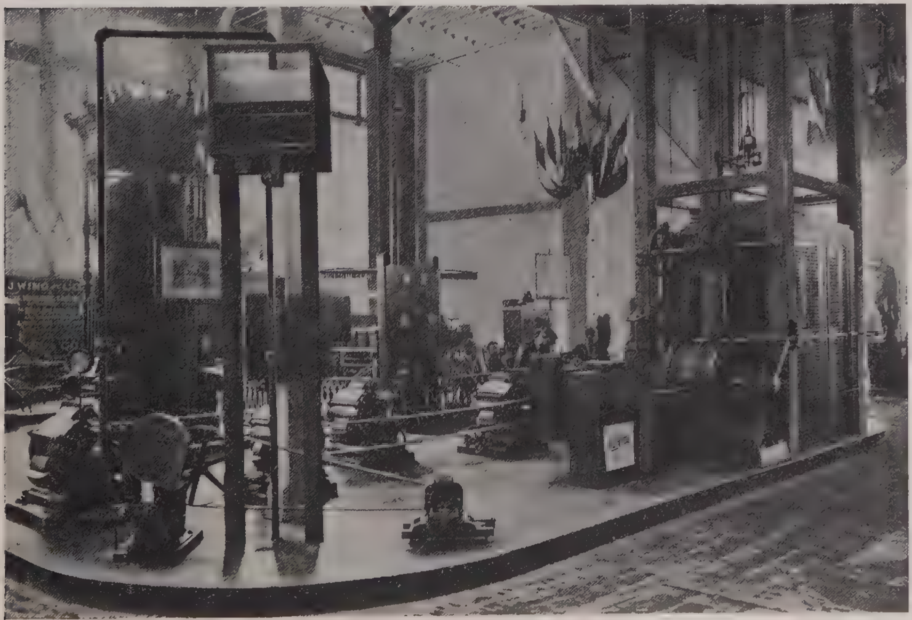
Eripuit Cœlo Fulmen Sceptrumque Tyrannis.

In the statue he will recognize that of the great philosopher who, if he did not, as the epitaph would have us believe, wrest from the tyrant his sceptre, was the first to steal from heaven its lightning. Passing through the portal and beneath the arch which encircles it, we find ourselves in the hall of Electricity, an edifice somewhat daring in design, but with such elements of the picturesque as its special uses would permit. Before making further mention of this structure, let us pause for a moment within its portico, for here is one of the main architectural features of the composition. In describing this gem of artistic workmanship, with the façade to which it gives emphasis, I cannot do better than adopt the words of one of its artificers, Henry Van Brunt, of the Kansas City firm of Van Brunt and Howe, to whom I am partially indebted for my sketch of other Exposition buildings.

"On the south side," he says, "it was necessary to make a concession to that spirit of grandeur and ceremony which should prevail around the great court of the Exposition. Accordingly the vertical line, predominant elsewhere in the building as a foil to its long, low, horizontal mass, is here subordinate to the spirit of repose. To this end the campaniles on the corners are set back from the front, but connected with it by gabled pavilions, and the principal entrance on this side is treated as a triumphal arch, crowned with a classic pediment containing an escutcheon, which bears the electromagnet as a symbol of electricity, and is supported on each side by a female figure representing the two principal industries connected with this science—electric lighting and the telegraph. Above, in contrast with the somewhat fantastic movement of the skylines elsewhere, rises a solid elevated attic, forming a severe horizontal outline against the sky. This central mass is buttressed on each side by great consoles, supporting emblematic statues resting on pedestals, and embellished with medallions of Morse and Vail, the American inventors of the electric telegraph."



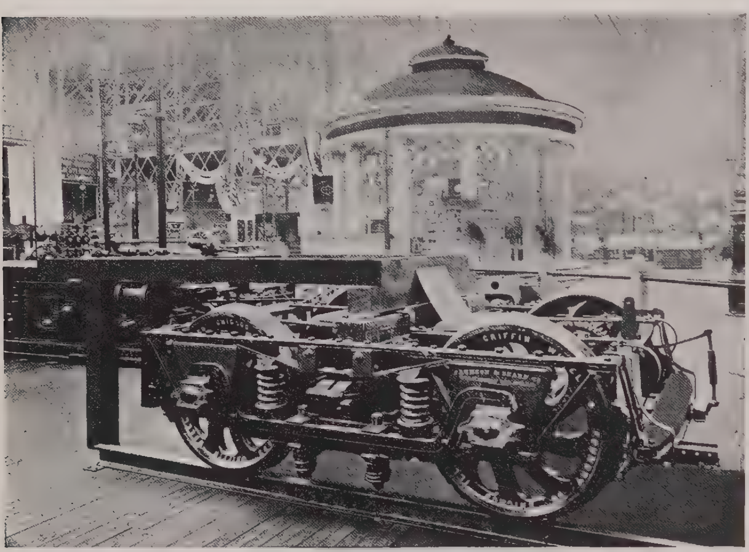
EDISON DYNAMO



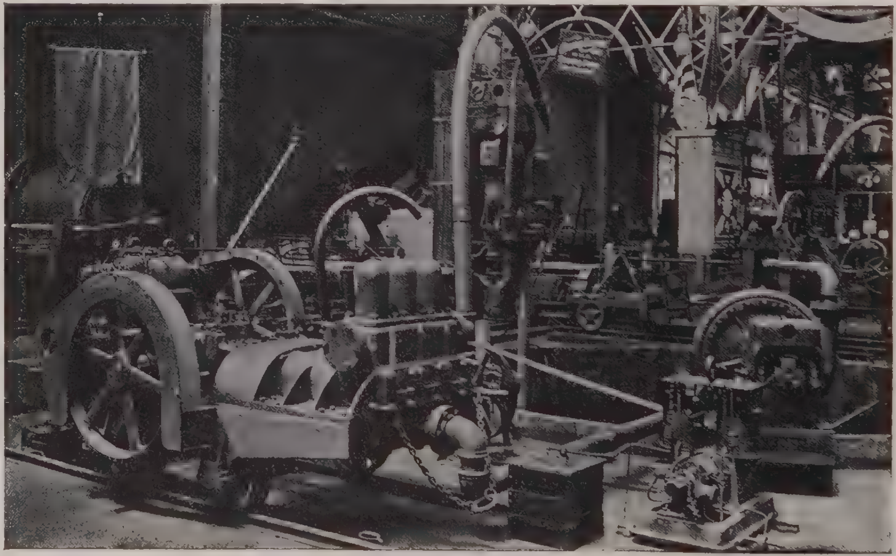
ELECTRIC ELEVATOR

In the centre of the great portal is the statue of Franklin, by Carl Rohl-Smith, fifteen feet in height, and one of the best conceptions ever presented of the great discoverer, his gaze turned upward toward the lowering clouds, in one hand the kite, and in the other the key of which all the world has read. Upon the frieze are inscribed in alphabetical order around the building the names of more than threescore electricians of all nationalities, whose names have become historic, the fame of those who are still among the living resting upon the exhibits within.

In preparing the plan of the Electricity building a space of twenty-three feet was adopted as the unit of measurement, fifteen of these modules forming the interior width of the building, and five that of the longitudinal nave which forms its central feature, the latter intersected by a transept of equal width and height. On each side of the nave are aisles, one module in width, and above is a series of galleries connected by bridges, and to which access is afforded by spacious stairways on either side of the principal entrances. To provide for the central areas occupied by nave and transept, both are unencumbered with columns, their pitched roofs being supported by arched trusses of sufficient height to admit of clear-story windows, and with a range of skylights at the foot of the pitch. Flat roofs with skylights cover the remainder of the building.

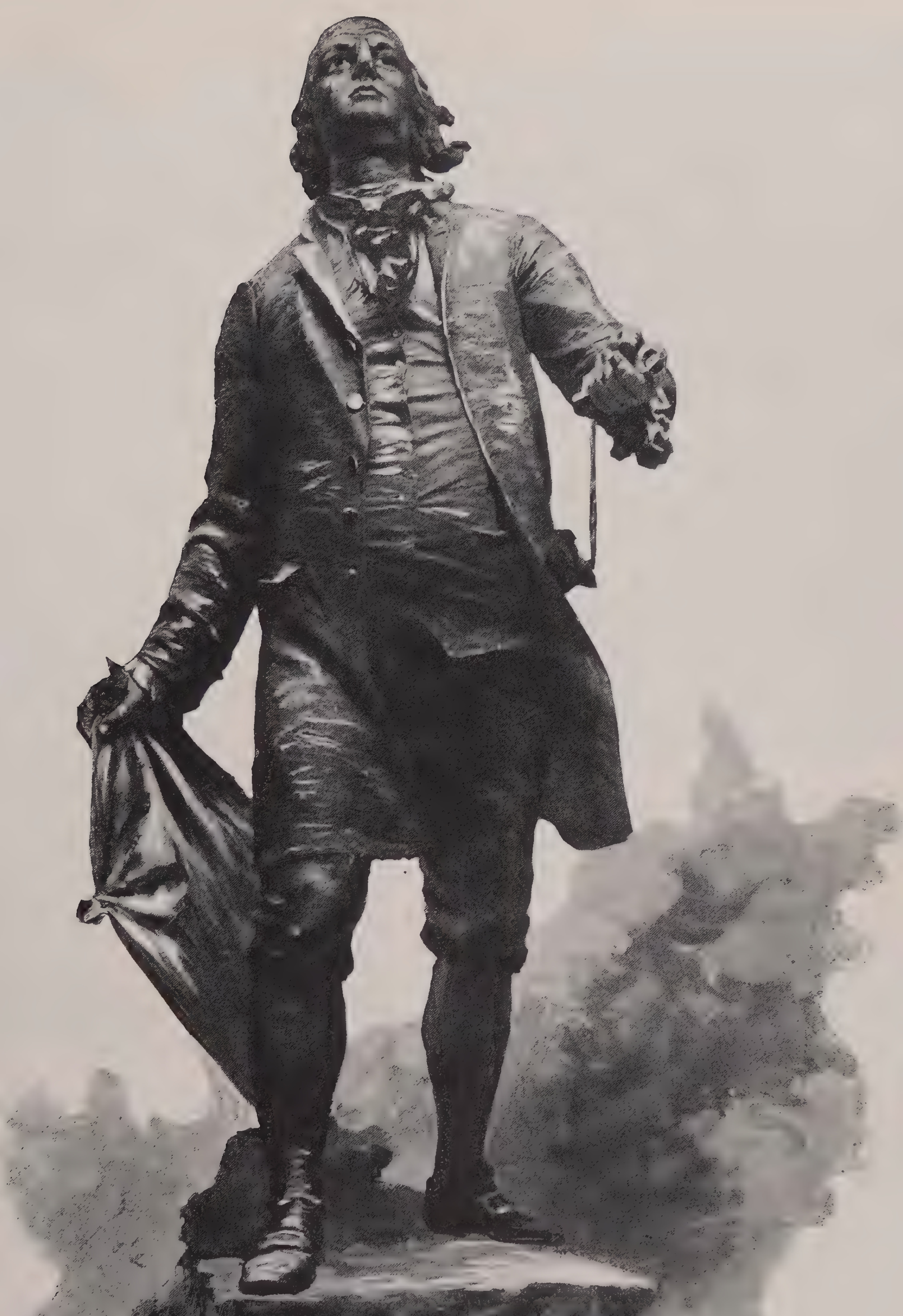

EDISON STREET CAR MOTOR

The area of Electricity hall, apart from galleries, is little more than five acres, fronting on the main court 350 feet, and extending about twice that distance length-wise toward the lagoon. Hence in this structure, small by comparison with its neighbors, but only by comparison, it was a part of the design to give to it such features as should mask its inferiority of size. But this could not be secured by giving additional height to the curtain walls, which must not exceed sixty feet from ground to cornice. The bays were therefore fashioned so as to furnish at frequent intervals bases for towers, and between them pilasters of the Corinthian order, projecting boldly from the piers, and ending in pedestals supporting banner-staves, which served also for a continuous series of electric lights. Further to emphasize the vertical lines of the building, in the centre of its two longer façades the intercepting transept ends in a pavilion, flanked with towers, upon which rests an open belvedere with rounded attic, supporting a cupola, and ending in candelabra of electric lights reflected from the overhanging canopy nearly 200 feet above ground. In front of the pavilions are porticos, with columns more than forty feet high, and also of the Corinthian order. On the north side, where the proximity of the lagoon permits more freedom of style, the portal is placed midway between two semi-circular projections, the towers on either side resembling those of the east and west pavilions, while on the panels of the arch are recumbent figures typical of discovery and investigation. Elsewhere the decorative scheme suggests the purposes to which the building is devoted, helping with the tall campaniles and their intermediate domes, to relieve a too strict conformity to classic models.

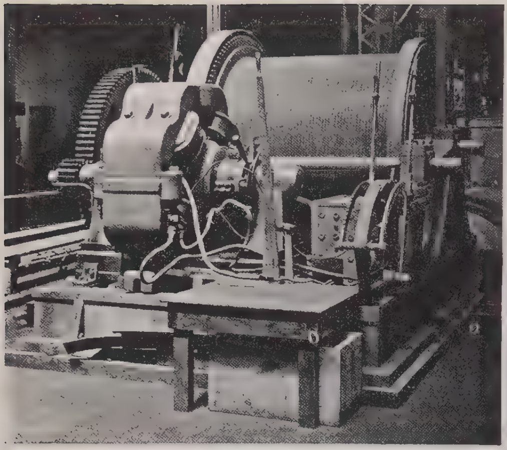

MINING PUMP

While the main object of the Electrical department, contained for the first time in a building of its own, is to display, with competitive tests, the working of electrical apparatus in practical use, it is also intended to present a history of this science from its very inception, with models, and in some instances the actual appliances used by the earlier inventors. Of the plant located in Machinery hall mention has already been made, and in addition to lighting its power is applied to manifold purposes, among them for the operation of an elevated railway within the grounds, for mining, milling, and metal work, for exhibits of electricity used for artistic effect, and in a word for all the wide field in which electric science has gained a permanent foothold.

Says the chief of the department: "The general scheme to be carried out is twofold. The exhibits will be practical, and they will also be popular. Every electrical concern and enterprise of any importance in



THE FRANKLIN STATUE



MINING HOIST

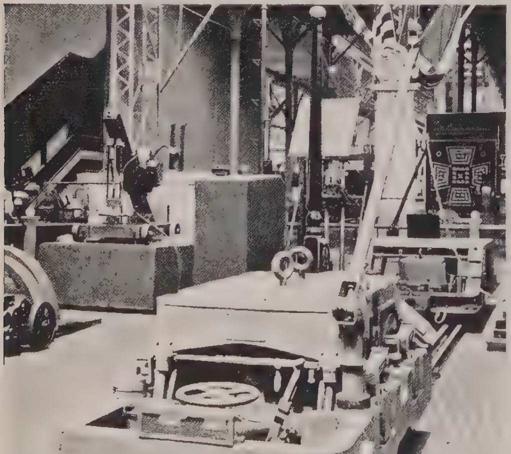
ELIHU THOMSON

the world will be represented. By means of the practical arrangement of the exhibits, by means of their scientific classification, covering the entire field of electrical science, by the opportunities afforded to compare the results of the more prominent electrical systems in supplying electric service for light, power, heat, and commercial purposes, with each of these different systems in actual operation, side by side, and almost under identical conditions, great popular object lessons will be presented, which will not only be intensely interesting to the eye and sense, but will also be highly educational to the electrical engineer, the central station manager, the manufacturer, the student, and the public in general. The final object is the enlightenment of the people as to the progress of a branch of science and industry yet scarcely out of its cradle, and to foreshadow the possibilities of its future."

In the centre of the building, and forming a part of the exhibits of the General Electric company, is the Edison tower, the so-called tower of light, its shaft encircled by thousands of miniature lamps, arranged in unique design, and with kaleidoscopic effect. Above it is a large incandescent lamp or series of lamps, composed of innumerable pieces of crystal, and at its base a pavilion, surrounded by a circular peristyle, and containing a number of electroliers and globes exhibited by a Pittsburg company, these also illumined at night by electricity. Thus when, at the silent touch of an unseen hand, the tower from base to apex is arrayed in robes of scintillating and many colored lights, we have here the very incarnation of electric science.

DRILLING BY ELECTRICITY

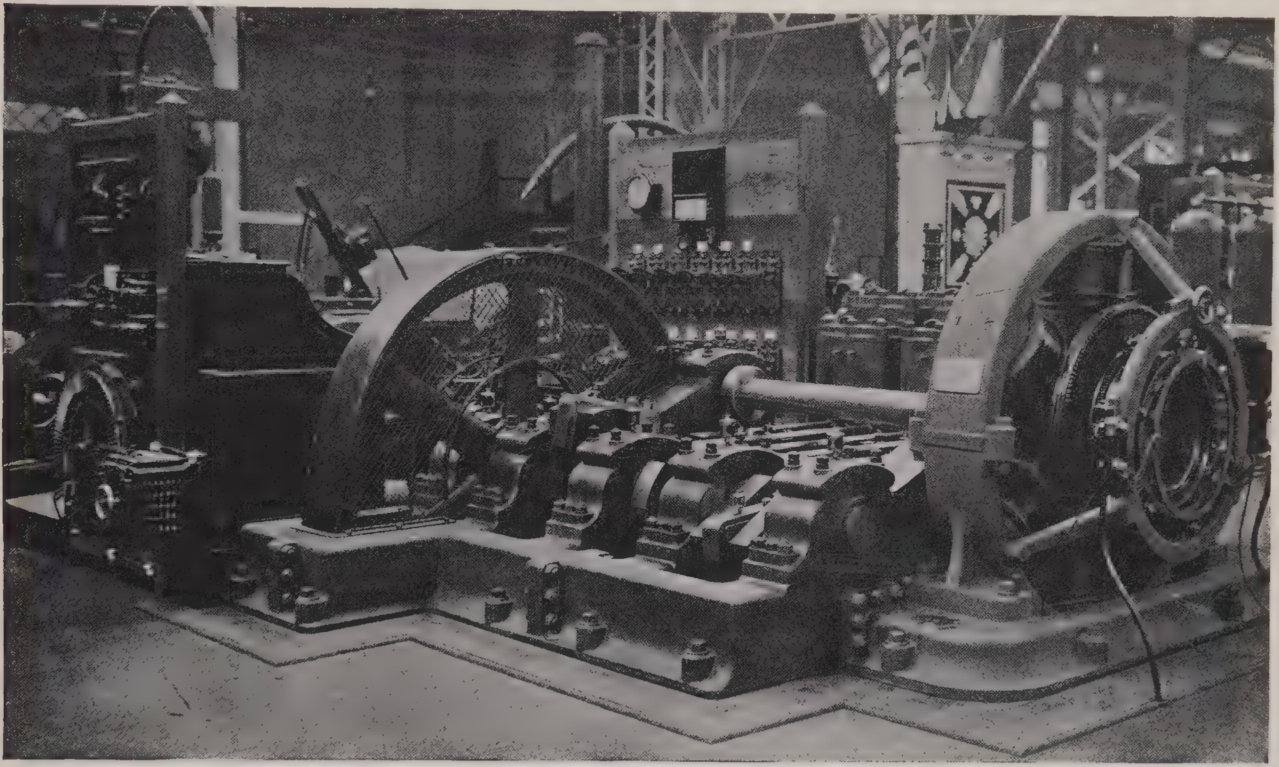
In the company's display are illustrated nearly all the uses to which electricity is put, their collection including machinery and apparatus of every description from the smallest of lamps to the most powerful of dynamos, and from electric toys to motors and motor cars. West of the tower of light is a section containing 2,500 specimens of Edison incandescent lamps, such as are made at the company's works at Harrison, New Jersey, and as declared by the highest courts of justice in Europe and the United States, the only lamps that are lawfully manufactured. Lamps are also shown in different stages of construction, illustrating the experiments of the inventor from their first inception to the perfected mechanism of the present day. In one of the compartments is apparatus for decorative purposes, so arranged that the quantity of light consumed can be regulated and registered by meters. In this section also is the first dynamo for incandescent lighting constructed by Edison in 1880 at his works at Menlo park, and near it is one of the dynamos used, some ten years ago, at a New York station of the Edison Electric Illuminating company. Though both are now somewhat out of date, they were regarded at the time as among the marvels of the age. The isolated incandescent lighting systems, such as are adapted to the use of hotels, theatres, and large business buildings are shown in a separate group.



THOMSON-HOUSTON MINING LOCOMOTIVE

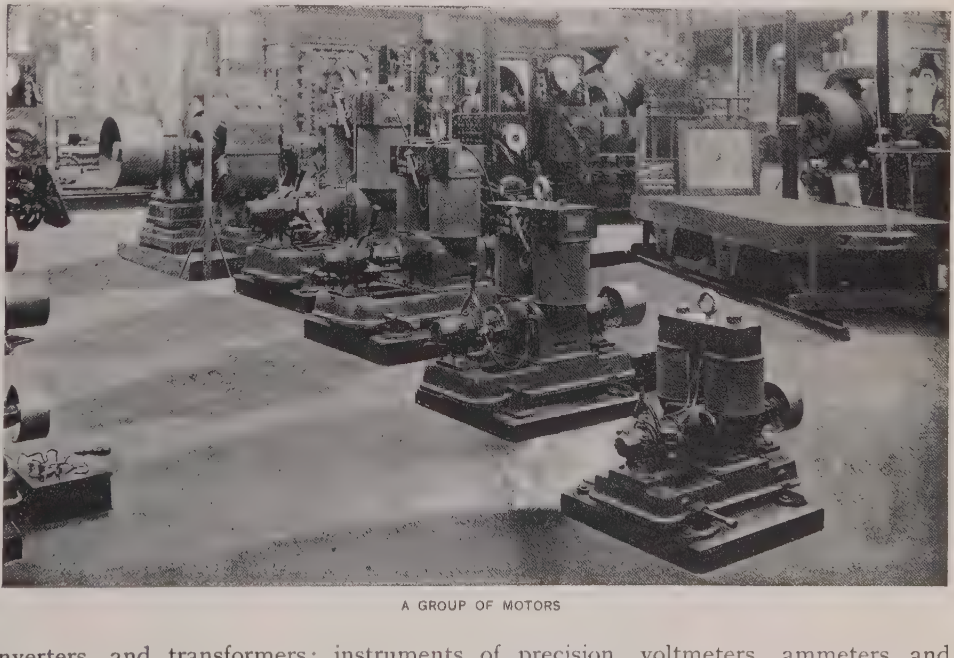
In its eastern section the company displays its Thomson-Houston arc-lighting apparatus in a larger oaken pavilion, containing also carbons of various grades arrayed in geometric figures, with dynamos and other appliances. Elsewhere in this section are the experimental apparatus used by Elihu Thomson for high voltage discharge, with portions of trees that have been struck by lightning showing the path of the bolt.

Among the objects of the department of Electricity was to illustrate the possibilities of that science as applied to mining and milling ores, not only in the transmission of power but in its direct application to purposes for which it could be made available. All this is demonstrated in the company's exhibit of machinery and appliances, including engines for hauling rock, mining pumps, hoists, drills, dumps, pressure blowers, air compressors, and centrifugal fans, with blocks of stone to show the working of the drills, and a large water tank to display the operations of the pumps. Thus is scientific mining being gradually revolutionized through the use of electric apparatus, which is also largely availed of for the working and refining of metals. Such machinery is rapidly gaining in favor throughout the mineral regions of the continent, from the coal mines of Pennsylvania to the gold and silver mines of Colorado, California, and Mexico. In addition to their more economic and expeditious work, electric appliances can be used to advantage at all seasons of the year, for the current in the wires is never checked by frost, and suffers no loss from condensation.

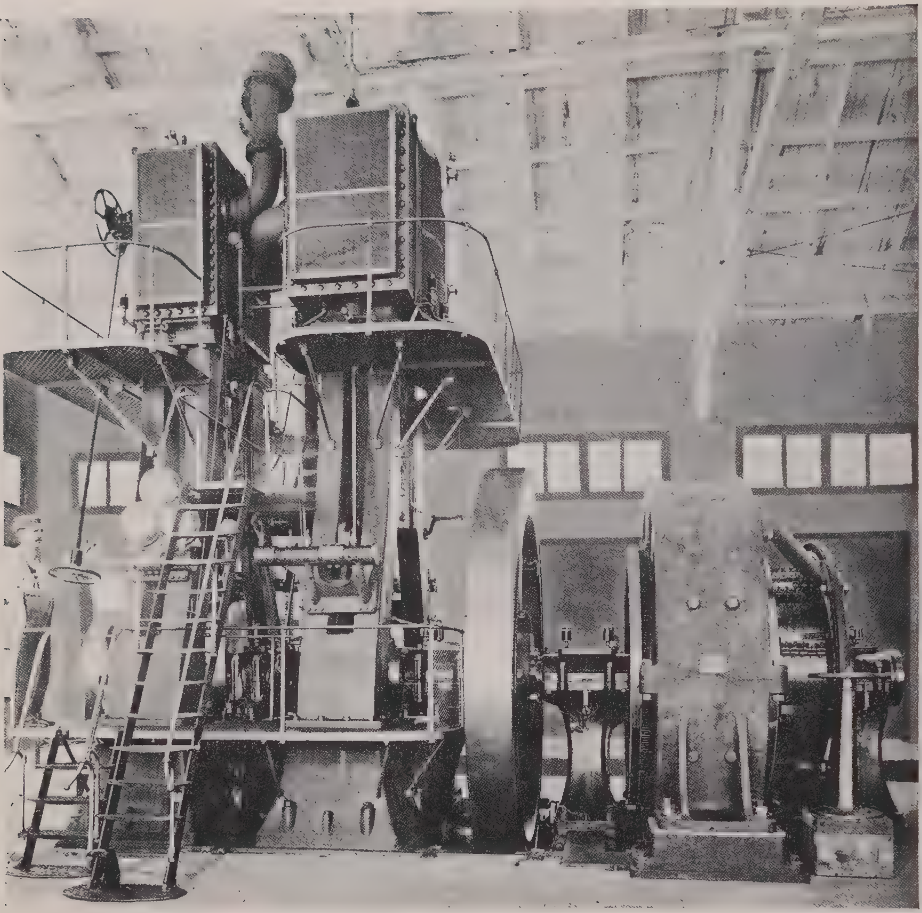


ELECTRIC MOTOR AND PUMP

Southwest of the Edison tower is the company's office, and adjacent to this its display of electric motors for railway purposes, for power transmission, and for general application, with a specimen of such as are used in the electric launches which ply on the waterways of the lake. There are also derricks, hoists, and a large collection of railway apparatus, with photographs displaying among other objects of interest the first electric railway built, as I have said, in 1885. Elsewhere in the company's collection are magnets, induction coils, converters, and transformers; instruments of precision, voltmeters, ammeters, and Watt meters; dynamos with direct and alternating currents, and for duplex telegraphic service, and apparatus used for war vessels, and for electrical construction and repair.



A GROUP OF MOTORS

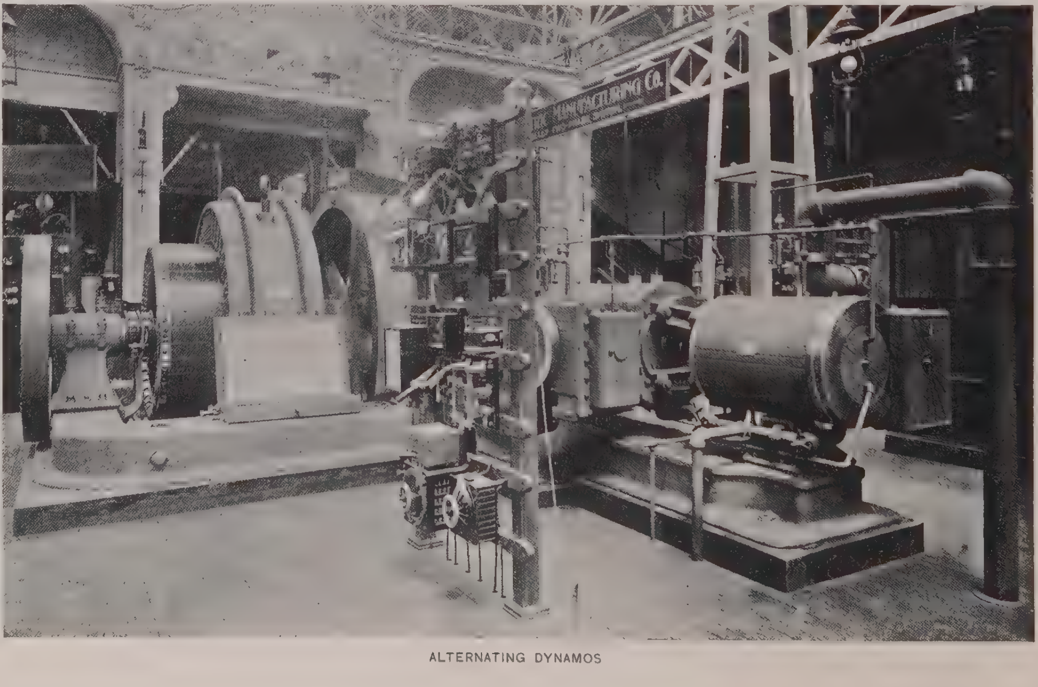


DYNAMO AND ENGINE

Upon the tracks west of the terminal station the company has on exhibition what is claimed to be the most powerful electric locomotive in the world. It weighs thirty tons, is more than sixteen feet long and eleven in height, and has two motors, one at each axle, supplying the power. The locomotive is substantially constructed, its cab being of sheet iron with a fine interior finish of hard wood. Although the engine has been especially devised for railway work, it is proposed to introduce it upon suburban and elevated roads, and upon switching and short freight lines. An electrical air compressor furnishes power for brakes and whistles.

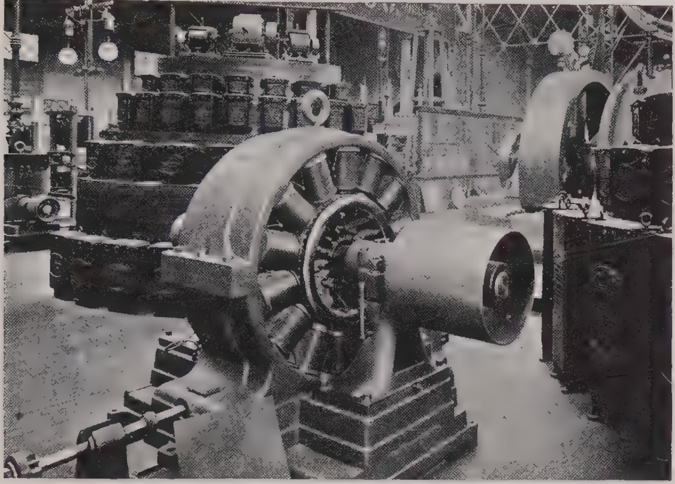
In truth there are few exhibitors more fully represented in the various branches of the Fair. By this company was furnished the equipment for the elevated intramural railroad, with power sufficient to keep in motion on its road-bed eighteen trains at a time, and with accommodation for several thousand passengers. The electric launches on the lagoons are propelled, as I have said, by its motors, the power being furnished by storage batteries beneath the deck. The huge iron girders and trusses in the Manufactures and other buildings, the monster locomotives in Transportation hall, and the heavier groups of statuary were all placed in position by its motors, which are also largely used for supplying machinery with motive force. Finally the electric fountains and two of the search-lights used for illuminating purposes came from the company's workshops.

Adjacent to the exhibits of the General Electric company are those of the Westinghouse Electric and Manufacturing company, by which was installed in Machinery hall the great power plant used for lighting the Exposition and buildings, capable of supplying simultaneously nearly 200,000 lamps with a total capacity of more than 3,000,000 candle-power. In the collection of appliances for arc and incandescent lighting, prominence is given to its alternating current lighting apparatus; but here and elsewhere are fully illustrated all the more recent improvements in the various branches of applied electricity. An interesting feature in its display is



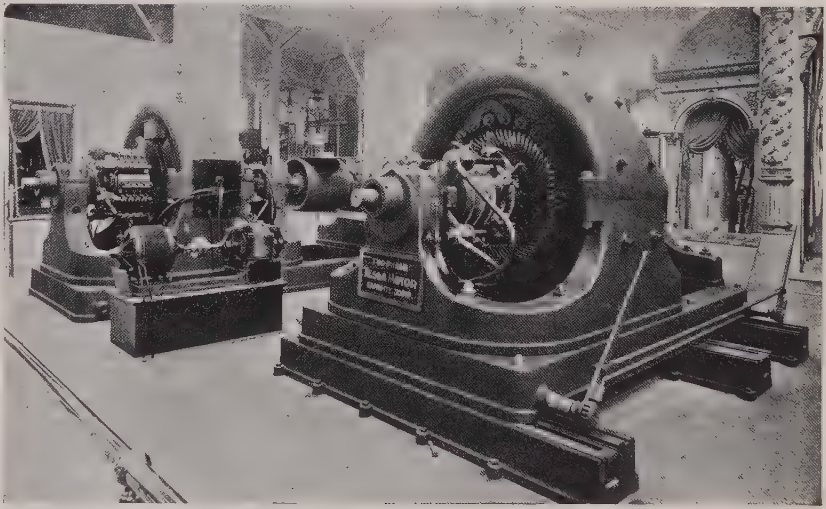
ALTERNATING DYNAMOS

a profile of Columbus, with decorative scrolls and letters, traced in incandescent lamps against a background of terra cotta on the southern wall of the Electricity building.



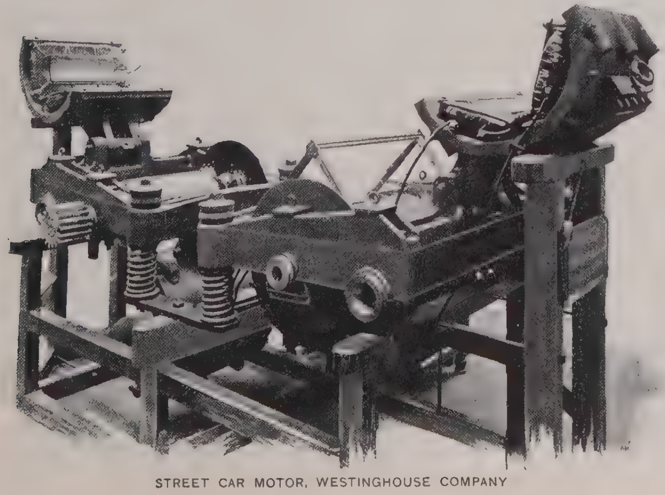
A MAMMOTH DYNAMO

Elsewhere in its 15,000 feet of floor space, and north of the Edison tower, is a darkened room for the display of what are termed high potential and high frequency phenomena. Adjacent to this we enter, through an archway richly colored in cream and gold, a section containing several of the first motors fashioned by the Austrian inventor, Nikola Tesla, with apparatus showing the results obtained in the use of high frequency alternating currents. Here also is fully illustrated the Tesla polyphase alternating current system for the transmission of power, including a 500 horse-power generator, the switch board at the generating station being connected with the one at the receiving or distributing station by an overhead four-wire circuit. The insulators that support this circuit are of the pattern designed for the San Antonio Light and Power company of Pomona, California, by which power up to 10,000 volts can be transmitted for 28 miles by an overhead circuit of bare copper wire.



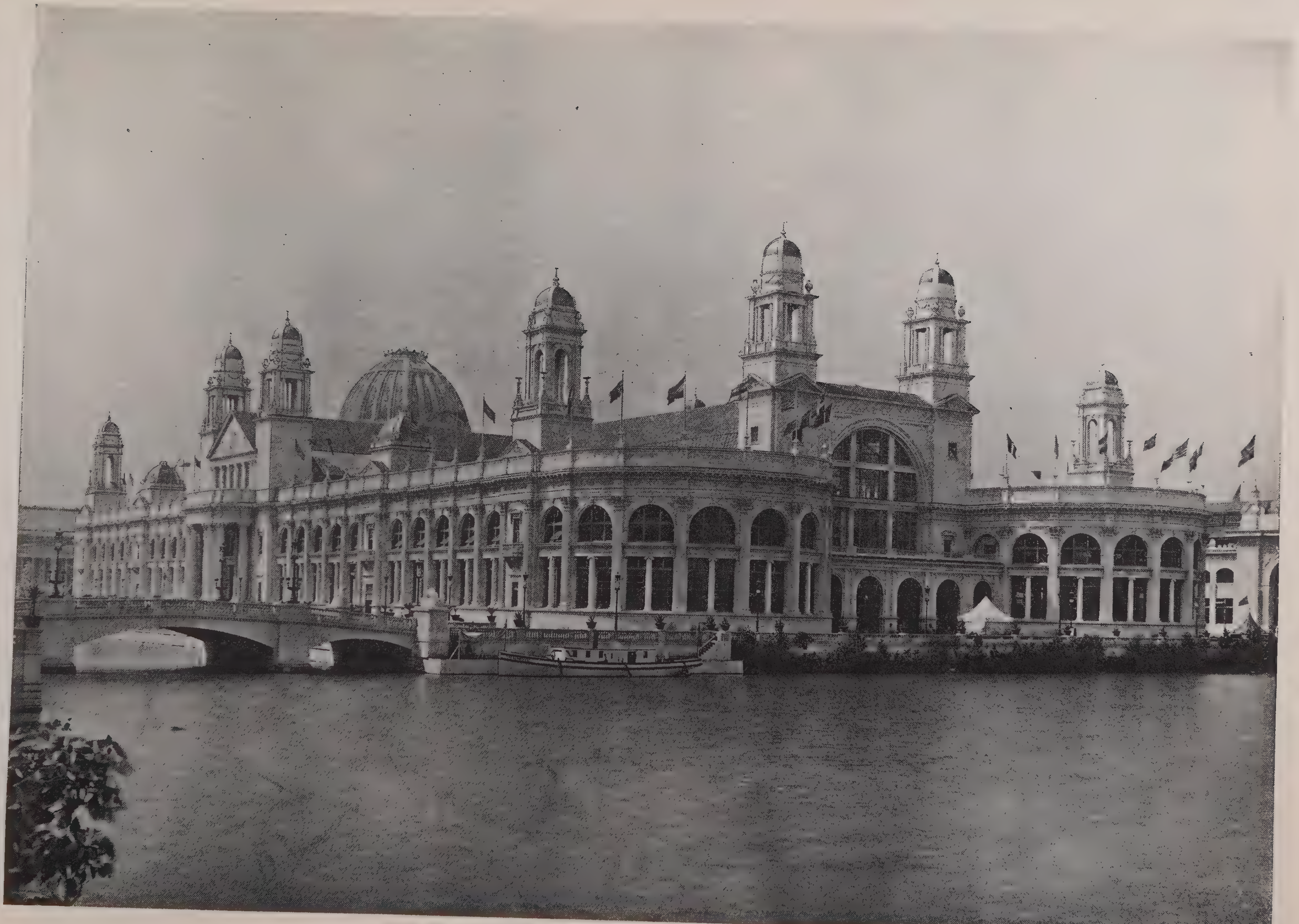
In its southern section the company has a collection of street railroad apparatus, with two powerful multipolar generators, one driven by a compound engine, and the other by a belt, with cars equipped with motors of the single reduction type, beneath which are galleries permitting visitors to examine their interior mechanism. There are also lines of switches, ammeters, voltmeters, and circuit breakers, with minor exhibits pertaining to the construction and working of such electric railway systems as those in which the company's cars carry their thousands daily between Chicago and its Fair.

A large area in the southeastern portion of the hall is occupied by the Western Electric company, of Chicago, whose exhibits consist of the apparatus which it manufactures, and the various spectacular effects produced thereby. The column which flashes forth zigzag lightning, around it revolving balls of fire, is one of the ornamental gems of the Exposition, and divides attention with the Egyptian temple whose exterior walls are decorated with native figures engaged in the manufacture and operation of the telephone, fire alarm, electric apparatus, and other of the company's devices. Egyptians are manipulating cables, dipping reels of wire into insulating baths, and bearing to their queen, typical of Chicago, lamps, dynamos, motors, batteries, and other appliances.

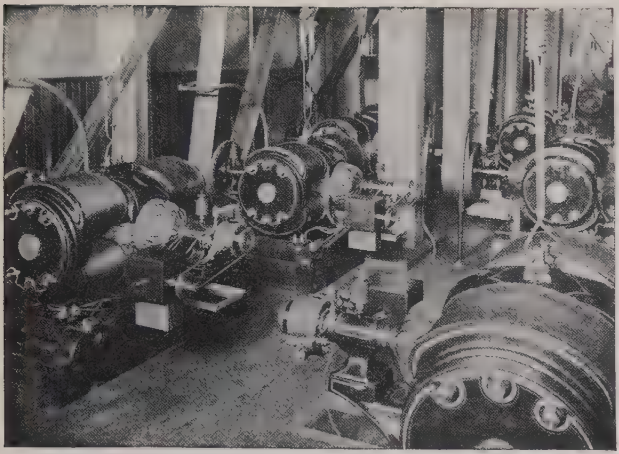


STREET CAR MOTOR, WESTINGHOUSE COMPANY

The temple is colored in warm roseate hues, with frieze of old gold and stencilling in Egyptian designs, while lotus blossoms and cut-glass jewels, lighted by hidden incandescent lamps, form the most striking decorations of the main entrances. The interior is divided into two compartments, whose rich ceilings and columns of glass are illumined by more than 1,000 changing lights, their decorative scheme including the lotus, the eagle, and the hooded serpent. Around the walls are show-cases, lined with red plush, and containing apparatus of the company's manufacture, as switchboards, receiving instruments, recorders, galvanometers, a stenographic machine for



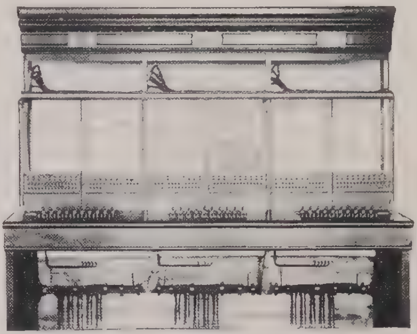
ELECTRICITY BUILDING, NORTH FRONT



DYNAMOS OF WESTERN ELECTRIC COMPANY

the use of the blind, a printing machine for telegraph operators, district telegraph and police call boxes, electric bells and buttons for hotels, elevators, and residences, in short, a collection covering almost the entire range of electric supplies.

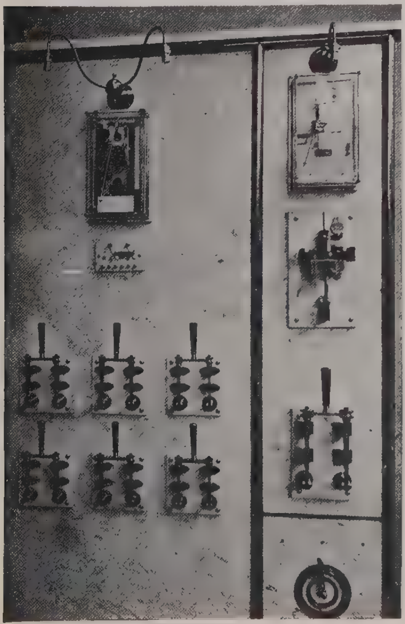
But the Egyptian temple and the electric tower by no means complete the company's display. Close at hand is a switchboard composed of slabs of Tennessee marble mounted in bronzed copper, from which issue the currents which supply both these structures, its reverse side showing the various connections, and the entrance and distribution of the circuits which originate in the company's plant at Machinery hall, half a mile away. Near the switchboard are various machines used by the company in manufacturing processes, including those which make nuts and screws, which insulate wires with silk and paper, braid the strands of conductors, and wind them upon spools, and perform a score of operations formerly done by hand. A complete exhibit of telephone apparatus is a feature of the display, including machines made by its factories in New York, Chicago, and Antwerp, and those constructed for the American Bell Telephone company. There is a large array of switchboards, showing the different styles fashioned within the past decade, with reels of cable covered with lead, and insulated with paper instead of cotton and paraffine.



TELEPHONE SWITCHBOARD

IN THE WESTINGHOUSE EXHIBIT

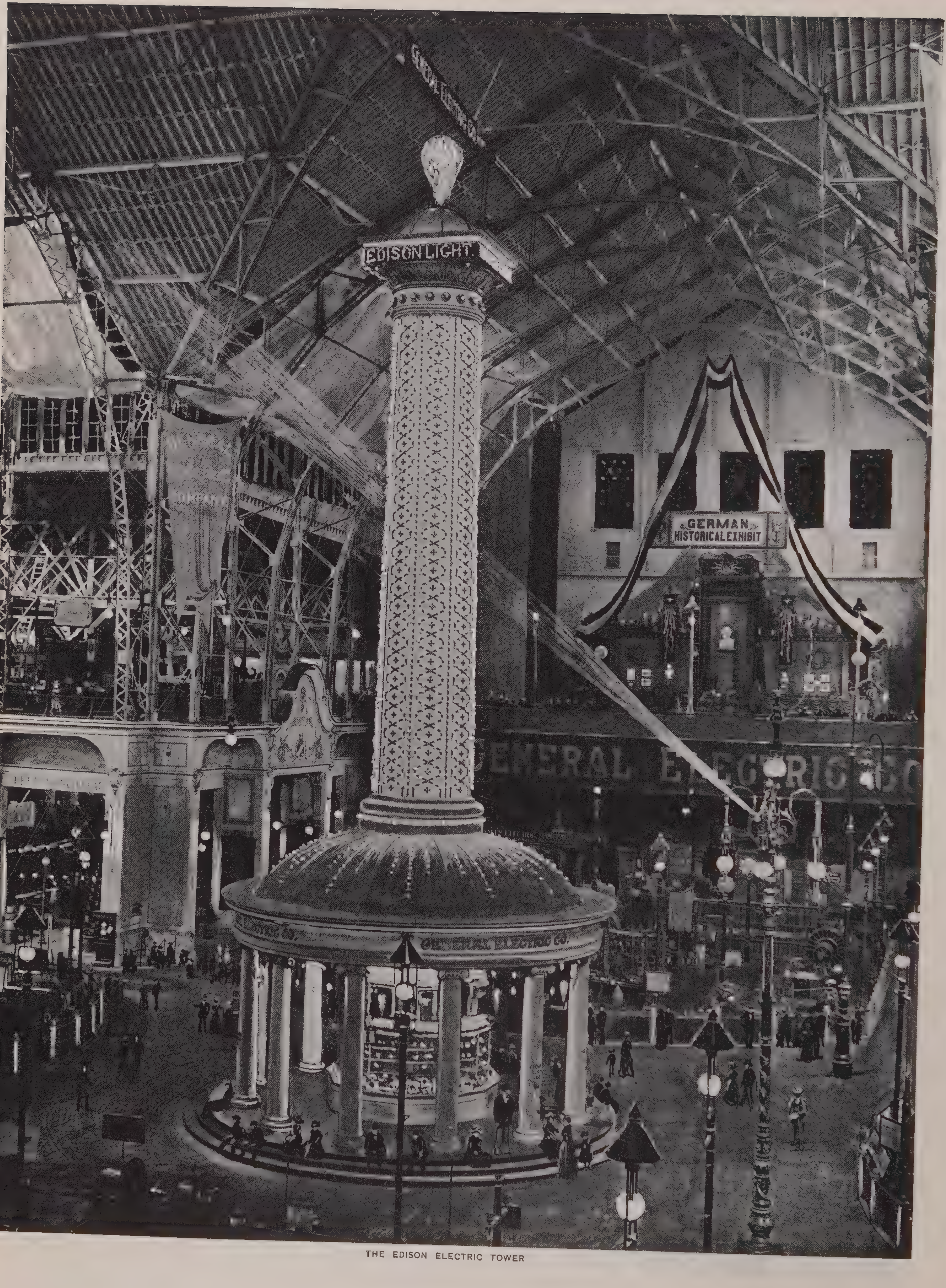
In this section is the tabulating machine used in United States census work, and an ingenious mechanism whose long finger, terminating in an incandescent bulb, is continually writing in air the words, Western Electric company. Batteries and incandescent lamps are elsewhere grouped, and a portion of the space is occupied by a small scenic theatre presenting an alpine landscape, over which are cast the changing hues of night, dawn, midday, and sunset, thus showing that with skilful manipulation electric light may be shorn of its coldness and hardness, and endowed with all the rich colors of the natural rays. In a historic collection is a large portrait of Moses G. Farmer, and a handbill dated 1847, advertising the public exhibition of his recently invented electro-magnetic engine. The Farmer electric cars and incandescent lamps are still among the specialties manufactured by the company.



WESTINGHOUSE SWITCHES

Adjoining the exhibits of the Western Electric company is a classic structure, with two large porticos, representing the American Bell Telephone company. At its main entrance is a broad stairway, guarded by two figures of the sphinx, over which are large candelabra of bronze, and a row of Ionic pillars opening into a court containing fountains of tasteful design. Beyond is the temple proper, octagonal in shape, through which one may pass to the opposite entrance, or examine the collections in either of the side corridors.

On one of the walls are tabulated statements showing the growth of the company's business from 1881 to 1893, and from which it appears that in the former year it employed 1,400 persons, and in the latter nearly 10,000; that at the present time it operates more than 440,000 miles of wire in and between the larger cities, and that 552,000 of its telephones are in constant use. The map on which is represented its system of long-distance telephones indicates that Boston, Washington, and Milwaukee are at its extremities, with lines between all connecting points of importance.



THE EDISON ELECTRIC TOWER

Telephones for the use of marine divers and those who travel by water are also on exposition.

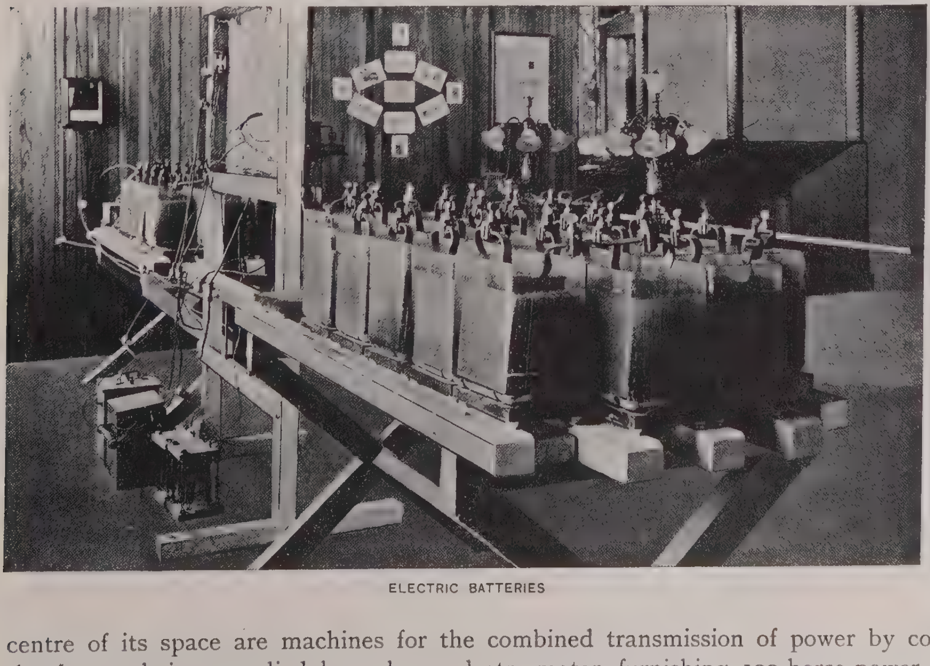
In a series of cases covering the entire length of one of the corridors is a historic collection, representing the essential features of the telephone first constructed by Alexander Graham Bell in January, 1875, with subsequent improvements; also the Blake transmitter, the Hughes microphone of 1878, and other inventions bearing upon his patents. In the opposite corridor is a central telephone office, with a dozen or more of operators, where one may observe all the workings of what to most of us has long since ceased to be a mystery. Here is also a series of drawings and photographs, showing the underground construction of telephone systems now generally adopted in the larger cities. Within the inner chamber of the pavilion is a life size painting of Bell, and a gallery of photographs showing the buildings owned or occupied by company. In the north portico beyond is a long-distance telephone connecting with New York, its workings daily exhibited and tested.

West of the space allotted to the Telephone company is a pavilion of Grecian architecture, whose ceiling is colored in imitation of the mid-day sky. Without is a collection of magnets, coils, and dynamos, among the last being a generator such as is used in the Calumet Hecla copper mines. A space of 30 feet along the western side is occupied by the largest switchboard in Electricity hall, specially constructed for exposition, 30 feet in height, and with a capacity of ten circuits and 30,000 lights. The company has also an exhibit of switchboards for arc and incandescent lights, with electric motors of many kinds, and a large assortment of carbons.

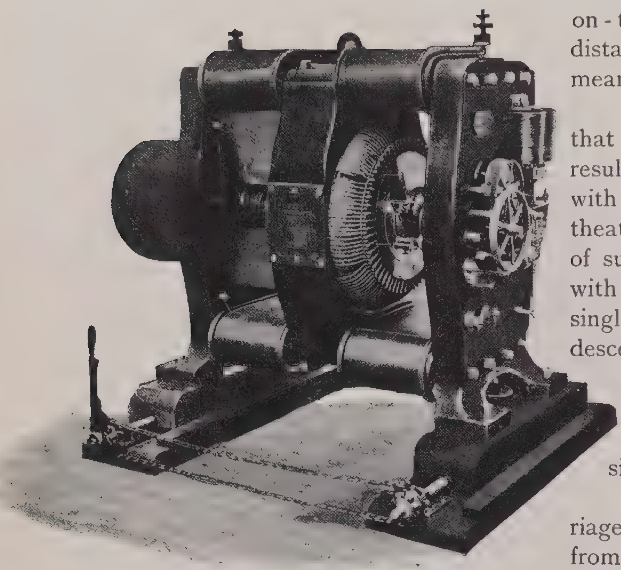
ENTRANCE TO BELL TELEPHONE PAVILION

The Fort Wayne Electric company, whose specialty is the manufacture of appliances used in the Wood system, has a large section in this vicinity in which are exhibited dynamos, magnets, generators, switches, motors, meters, and arc, incandescent, and search lights. Here also is displayed the first dynamo built by James J. Wood, in May, 1879, weighing only eighty-six pounds, together with the various lights used in several cities of metropolitan rank in which the Wood system has been largely adopted.

In the groups above mentioned are represented the more prominent manufacturers of electric apparatus and supplies, their collections occupying the southern half of the Electricity building, and a portion of its northern section. But there are also numerous exhibits of a special, and some of them of a specially interesting character extending in unbroken array along the walls. Before describing them, in conjunction with the gallery display, let us first see what foreign countries have to show on the ground floor of the hall.


ELECTRIC BATTERIES

Among the German exhibits, occupying a liberal space in the northeastern portion of the building, may first be mentioned those of the Allgemeine Elektricitätz-Gesellschaft, or General Electrical society, whose headquarters are in Berlin, but with numerous branches elsewhere in Germany and other European countries. In the centre of its space are machines for the combined transmission of power by continuous and multiphase currents, the former being supplied by a large electro-motor, furnishing 100 horse-power and making about 500 revolutions to the minute. By means of such currents power has been transmitted from Lauffen on the Neckar to Frankfort-



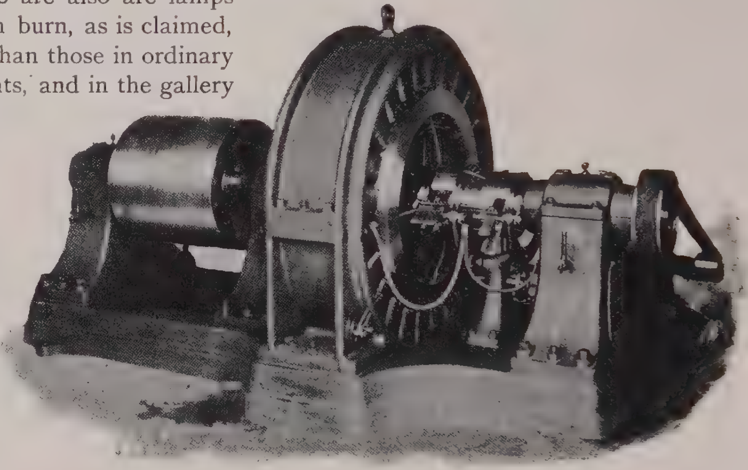
WOOD ARC DYNAMO

on-the-Main, more than 100 miles apart, this being the longest distance to which electric power has been transmitted, though by no means the limit of distance.

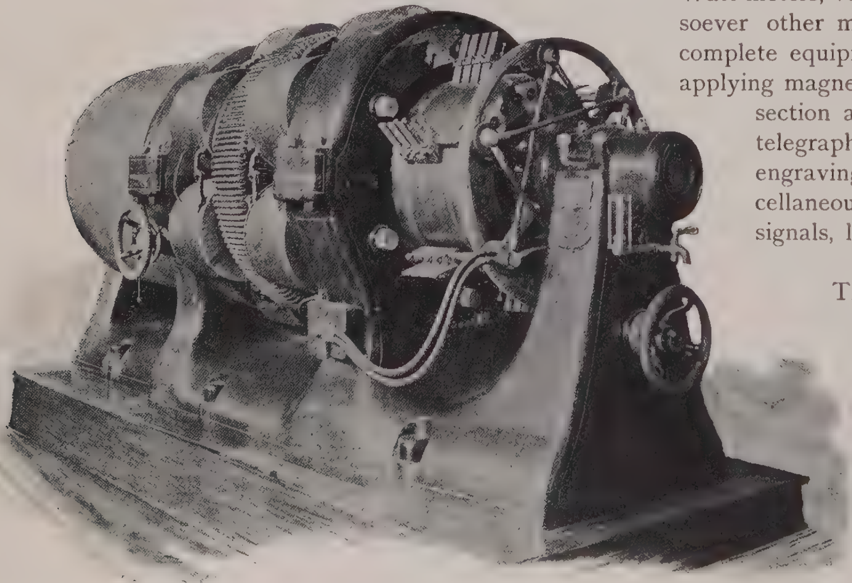
An interesting display is the stage-lighting apparatus, so arranged that its action may be observed from any point of view. This is the result of many years of study and practical experience in collaboration with specialists, and is now being largely used in German and other theatres. By it are produced the broad glare of noonday, the glow of sunset, the silvery shades of moonlight, and the grey hues of dawn, with lightning flashes and other intermittent phenomena, all by a single instrument connected with colored lamps. Of arc and incandescent lamps there is also a number of specimens, with motors and materials for electric railways, apparatus for storage batteries, conductors, conducting and insulating materials in many varieties, measuring and controlling instruments, electric clocks, railroad signals, and appliances for heating and cooking.

By Siemens and Halske of Berlin is exhibited a railway carriage, driven by a three phase current motor, the current transmitted from a distance, and reduced by a transformer to the strength required. There are also arc lamps which burn, as is claimed, without flickering, with a clearer, steadier light than those in ordinary use; there are surveying and measuring instruments, and in the gallery is a collection of historic apparatus of which mention is made elsewhere in this chapter.

Among the exhibits by the Nuremberg firm of Schuckert and company the most remarkable are the great searchlights on the roof of the Manufactures and other buildings, as described on a former page. Felten and Guilleaume of Carlswerk have a large assortment of wires and cables in coils and cross sections, many of them arranged in the form of pyramids, with barbed, braided, and other wires of many varieties and in many forms. Hartmann and Brown have numerous specimens of apparatus, manufactured at their works near Frankfort on the Main, where are produced surveying and measuring instruments, galvanometers, magnetometers, Watt-meters, volt-meters, ammeters, pyrometers, and whatsoever other meters are known to electrical science, with complete equipments for laboratories, and mechanisms for applying magnetic tests to iron. Elsewhere in the German section are machines and lamps for electric lighting, telegraph and telephone instruments and appliances, engraving and electro-plating apparatus, and miscellaneous exhibits, as of burglar and fire-alarm signals, lightning rods, and electric toys.

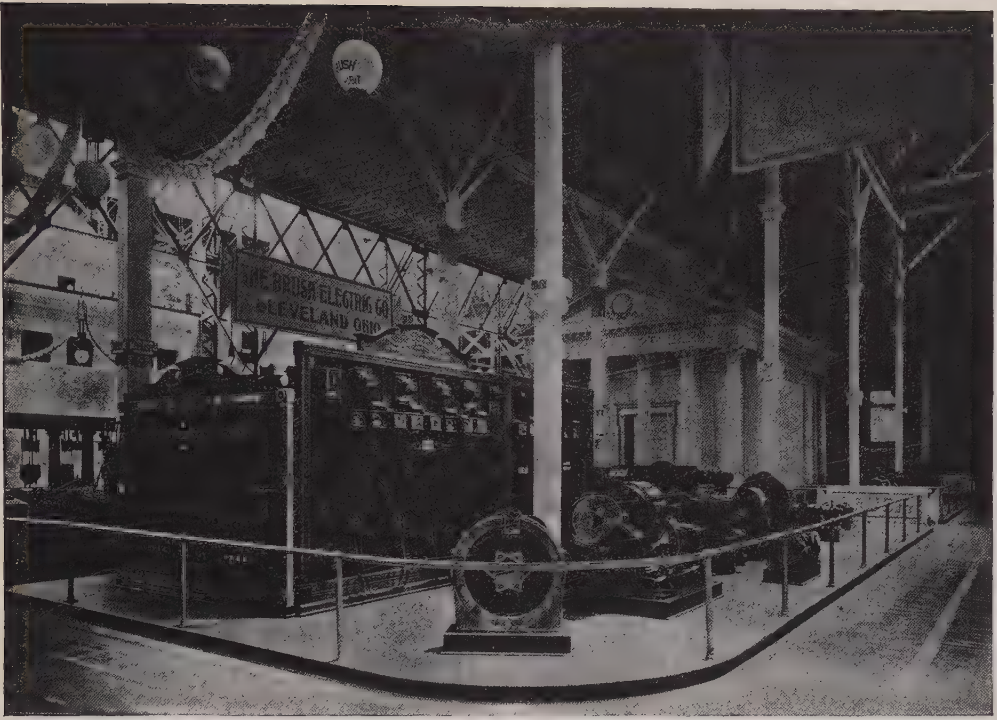


THE NEW WOOD DYNAMO

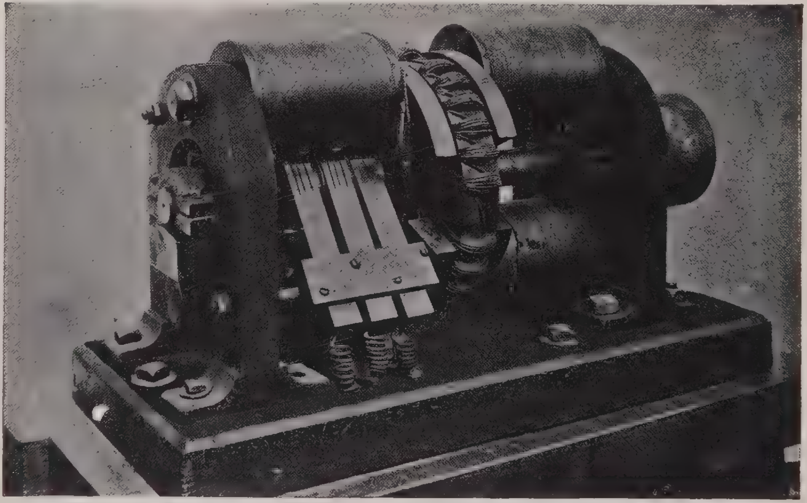


DISPLAYED BY THE SHORT COMPANY

The French section adjoining on the north the exhibits of the General Electric company, contains both national and private collections, the former chiefly in the northwestern corner of the main floor. Here are explained the telegraph and telephone systems organized and operated under government control, and there are self-acting instruments registering changes in temperature, atmospheric moisture, and direction of wind. In one of the cases are machines for testing cables, for ascertaining the resistance of electric currents, and for measuring their speed. The multiplex telegraphic system of E. Mercadier, director of the polytechnic school, is illustrated by a collection of apparatus. By means



of rapid alternate currents it is possible to use the same wires with multiplex and simple instruments, the former transmitting twelve telegrams in one direction, or transmitting and receiving the same number simultaneously. Mercadier and others have several multiplex printing machines, and there are automatic transmitters, a sextuple telegraph, and a model Morse station of four lines. A curious instrument called the Caselli autographic telegraph, patented in 1864, has for its object, as yet only partially realized, the fac-simile transmission of writing.

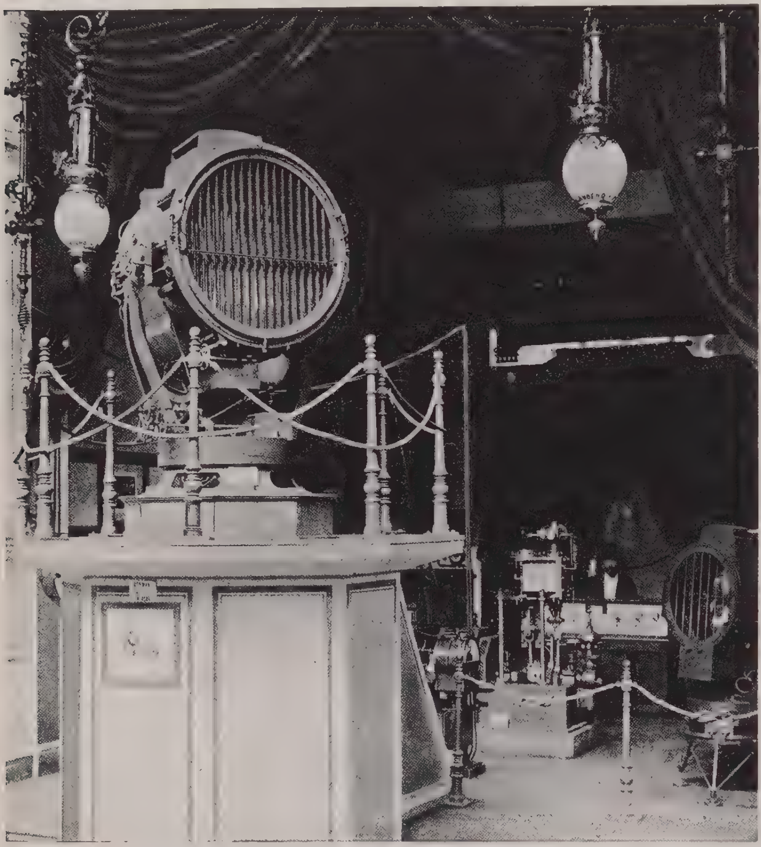

A BRUSH DYNAMO

On the walls of this section are maps showing the routes of telegraph and telephone lines, and diagrams illustrating the development of the telegraphic system since 1851. As the exhibit is specially made by the department of posts and telegraphs, pictures are also shown of the quarters occupied by the government telegraph force. This consists of about 900 employés, the department representing a system which embraces 178,000 miles of wire, and despatches 40,000,000 a year of telegrams. To the telephonic systems there are more than 11,000 subscribers.

Among the private exhibits are large collections of apparatus for lighting, power transmission, and miscellaneous purposes. A prominent feature is the appliances used for lighthouses, with the most powerful of reflectors and revolving beacon lamps, casting a blinding glare as seen at night in operation. Of special interest also is the electric cupola and furnace of M. Moissan, in which that young French scientist has developed a heat up to 9,000 degrees of Fahrenheit. By A. Piat and Sons of Paris and Soissons is displayed a hydro-electric riveter, driven by a combination of hydraulic pressure and electricity, and largely utilized for bridge work. For this and other riveting machines manufactured by the firm special advantages are claimed, some of them having been used by the department of public works, as for the erection of 1,000 feet spans over the river Loire. Elsewhere in the French section are exhibits similar to those of Germany and the United States, together with such scientific curiosities as electric matches, musical appliances, and apparatus for towing vessels, based on the principle of magnetic adherence.

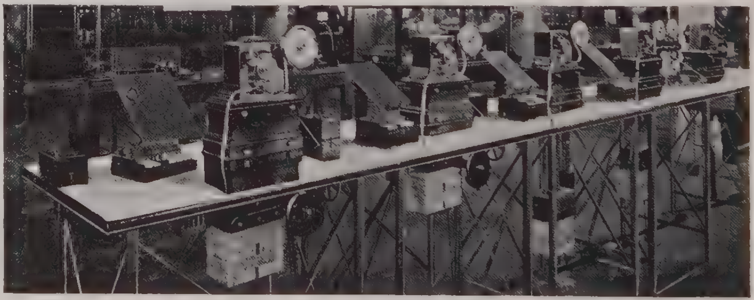
NICKEL PLATING MACHINERY

In the British section, west of the French exhibits, the most attractive feature is the collection of telegraphic apparatus contributed by the government, dating back to 1837, including the first specimen of underground telegraphs, and the earlier needle and other primitive instruments, all contrasting somewhat strangely with the modern appliances at their side. Add to these a few private exhibits, with those of the London branch of the General Electric company, and we have about all that Great Britain has to show us in this department. Among the former may be mentioned the display of the Homacoustic Speaking Tube company, consisting of attachments for voice tubes, and a homacoustic commutator with electric signalling device.


ONE OF SCHUCKERT'S SEARCH LIGHTS

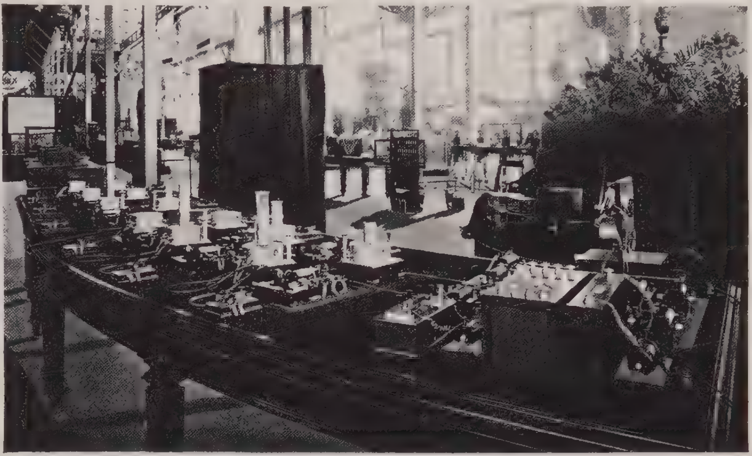
Near the northwest corner of Electricity hall is a tasteful structure, the purpose of which, except for ornament, does not appear until approaching close to it we find here a tower-like fabric composed almost entirely of carbons, cored and solid, and varying from an eighth of an inch to three inches in diameter. This is the exhibit of the Vienna firm of Hardtmuth and company, one of the largest of European manufacturers, and by which have been overcome the more serious difficulties in supplying a carbon adapted to modern conditions. Though more expensive than those of American make, it is claimed that this is more than compensated by superior efficiency, and thus it is that from the agents of the firm large quantities were purchased for use on the incandescent circuits within the Exposition grounds, for the illumination of the central court and basin, the electric fountains, and the battle-ship *Illinois*.

In the northeastern portion of the hall, near an array of noisy phonographs, is a collection of silent and motionless instruments which have a deep meaning to the Japanese and all other peoples who live in dread of earthquakes. It represents the exhibit of the Earthquake laboratory of the imperial university of Japan, and the instruments, known as seismographs, were invented partly by natives and partly by Europeans, not only to record the direction and violence of shocks, but to foretell their approach by indicating the slightest tremor of the earth's surface. The first earthquake instrument ever constructed, a drawing of which is displayed on one of the walls, is claimed as a Japanese invention, and bears date A. D. 132. In the more perfect machines of the present day the main feature of their construction is that during seismic disturbances they work from stationary points, and for minor shocks at least the diagrams written on smoked glass and paper are considered by scientists to be true measurements of the earth's motions.


BOUDOT'S PRINTING MACHINE

Many instruments are here exhibited, of different patterns and intended for various purposes. Upon the slightest disturbance of the earth the electric circuit is closed, and the machinery set free which drives the recording surfaces on which the diagrams are written. In one style of instrument this consists of a smoked glass revolving plate, the lines being written upon it by horizontal pendulums and vertical spring levers, both motions of the earth being thus registered. But whether the record is made in this fashion or by pencils upon bands of paper wound on drums, the machinery is kept in motion by electric clock-work, the rate of revolution is marked by an electric time ticker, and when convulsion or tremor ceases, the current is broken and the mechanism ceases to work.

Special instruments are used to record violent motions, wave-like undulations, and small, local displacements. A type of the last named is known as the mantel-piece seismograph, and is intended for the use of those who simply wish to know the direction and nature of motion as recorded at their own residences. The tremometer is one form of an instrument used to record slight earth tremors, such as are common to many countries. Its essential feature is a delicate pointer from which electric sparks are discharged upon a band of paper, automatically moving across a brass table. If the pointer and the earth are at rest, then the holes which are burned are recorded in a straight line; otherwise, the bands of paper are perforated in all directions around what would be the normal line. A more satisfactory and recent method of registering these motions is by means of a continuous photograph of a ray of light reflected from a small mirror attached to an extremely delicate horizontal pendulum. There are also in this group a clock for recording the duration of an earthquake, and several safety lamps which, if overturned, are at once extinguished. Under a glass case is a mass of wire, bent and twisted in all directions, representing the trend of the shocks during the great convulsion of January 15, 1887, the numbers at different points indicating the seconds of their duration.


MERCADIER'S MULTIPLEX TELEGRAPH INSTRUMENTS

Near the collection of instruments from the seismological laboratory is a series of pictures representing ruined buildings, dark fissures in fields and valleys, bridges hurled into rivers, and other effects of such convulsions as those of 1887 and 1891. Here alone is a sufficient explanation of the interest taken by the Japanese in the study of seismic phenomena, whereby they hope eventually to obtain such scientific data as will enable engineers to build structures that will withstand the strongest shocks and the most complex motions of the earth.

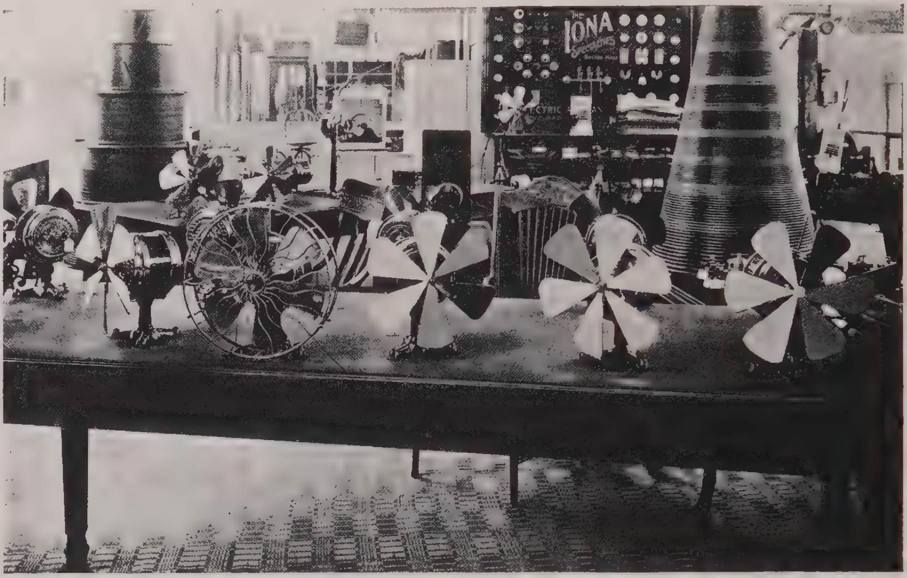
FRENCH TELEPHONES

Electric motors, with their application to street, underground, and mining railways, and to machinery in general, are displayed in various portions of the hall and galleries, as well as in the Machinery and Transportation buildings. On the ground floor a factory at Portland, Maine, has among its collection a coffee mill which can be operated either by electrical or water power. By the former process it is claimed that coffee may be ground at a cost of five cents for every hundred pounds. Other of its exhibits are a combined water motor and dynamo, and a combined engine and dynamo, both of which are among the most powerful mechanisms of their kind.

On either side of the southern portal are exhibits of motors, the largest by an electric motor company of New York, which has also fans for ventilating ships and large buildings, with blowers for forges and furnaces, pumps for mining operations and water works, travelling cranes and hoists, organ bellows, elevators, mill machinery, and telephone and telegraph apparatus. Opposite is the dainty bronze pavilion of the Indianapolis company, another manufacturer of electric power machinery. Near the western entrance of the hall, the company which operates the movable side-walk at the lake pier has a large collection of generators, motors, dynamos, and appliances for incandescent and arc lighting. For its so-called Novak lamp, outlined on the pavilion in letters of light, it is claimed that this is the only incandescent lamp that retains to the last its original candle power.

LIGHT HOUSE REFLECTORS, FRENCH SECTION

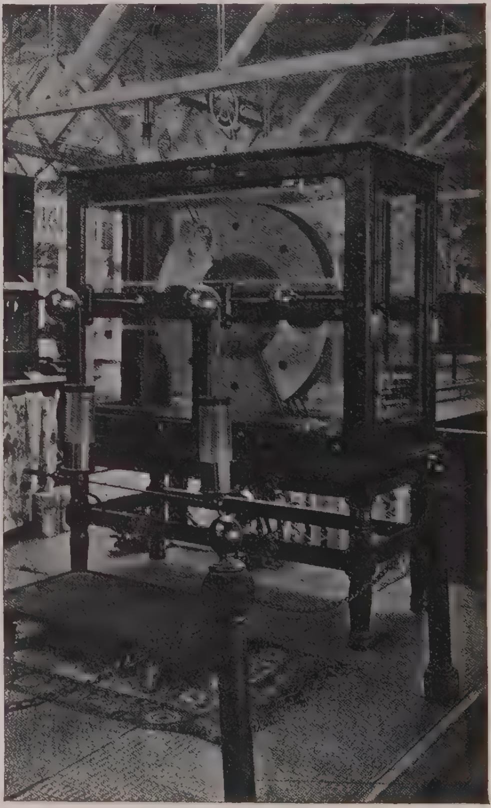
The largest manufacturers of electrical machinery who exhibit in the body of the hall, make a specialty of supplying street, underground, and elevated railroads, with their operating apparatus. There are also several companies whose operations are restricted to these specialties, a Cleveland firm displaying one of the simplest of all such mechanisms, a single motor suspended on rubber cushions from the truck frame, so protected that it cannot be injured by heat or cold, dust or gravel, water, snow, or slush. Another company shows a gearless street-car motor, for which it is claimed that few of its appliances will either wear out or injure any of the surrounding parts.


ELECTRIC FANS

Near these exhibits is a collection of machines made by an electric welding company, of Boston, and largely used by manufacturers. The current is made to pass through the ends of the metals that are to be welded, the heat being generated at the point of contact, and whether it be required to fasten strands of wire or the links of a watch chain, or to forge steel projectiles of war, the joints of rails, or the chain armor of an iron clad, the result is uniform. Shells and other projectiles used by the government are welded by this company, and there are here on exposition sheets of wrought iron, four inches thick, which have been pierced by shells at a distance of ninety feet, their lines of juncture still remaining intact. Thus also are welded metallic coils; fences and wheels are thus welded, the several processes being daily illustrated by machinery in operation. Side by side with small machines worked by hand are those whose beds are many feet in diameter, but the adjustments of each are so perfect that in every instance the welding is performed with the utmost precision.

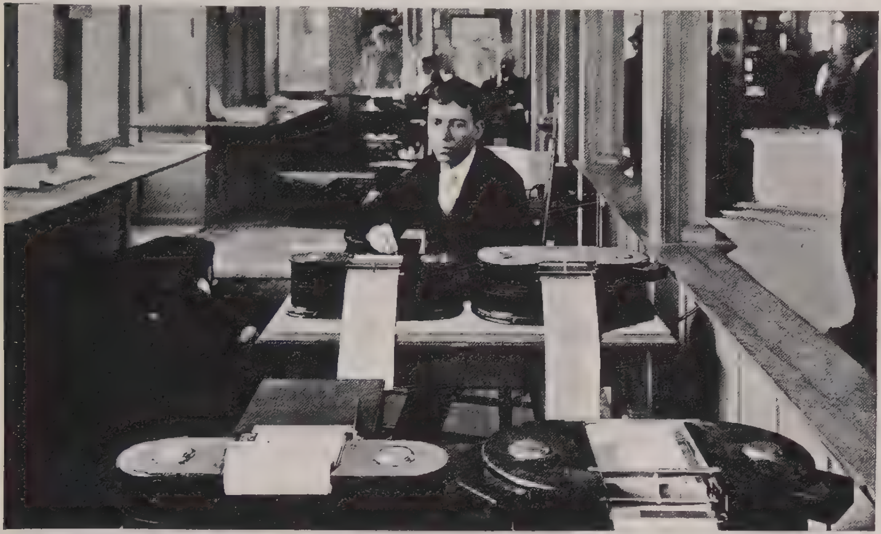
PYRAMID OF COPPER WIRE

On the opposite side of the hall is another exhibit by a Boston firm, which also forges by electricity. Both companies manufacture switches, rheostats, safely appliances, and various apparatus for the transmission and regulation of the electric current, and by several companies are displayed cement-lined pipes and other conduits, chiefly for underground service. Makers of insulated cables and wires, tapes and compounds, are mainly represented in the galleries, but on the ground floor a Massachusetts company has specimens of its so-called insulac, claimed to be impervious to oil and other substances which interfere with electrical circuits, and said to possess four times the resistive power of the finest grade


THE HOLTZ INDUCTOR

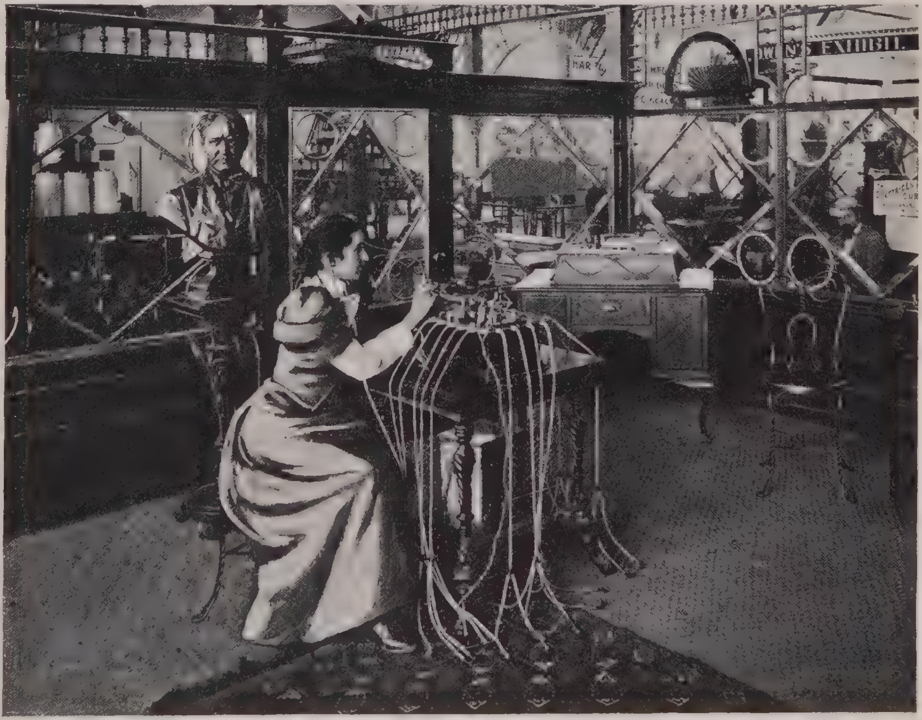
of shellac. As the discovery of a perfect insulating compound is one of the problems of the day, such exhibits are of special scientific interest.

In various sections surrounding the main body of the hall is machinery, at times in operation, for electrotyping, plating, gilding, and nickeling, with such as is used for separating metals from their ores or alloys. A Chicago company shows the first electro-magnetic machine, made in 1844 for an English firm, claiming that its own apparatus is in the line of direct succession. Besides electrotyping and electro-plating, this company makes a specialty of polishing, lacquering, and buffing, a section of a walrus hide, thick and firm as a board, showing the chief material for the wheels used in these branches of work.

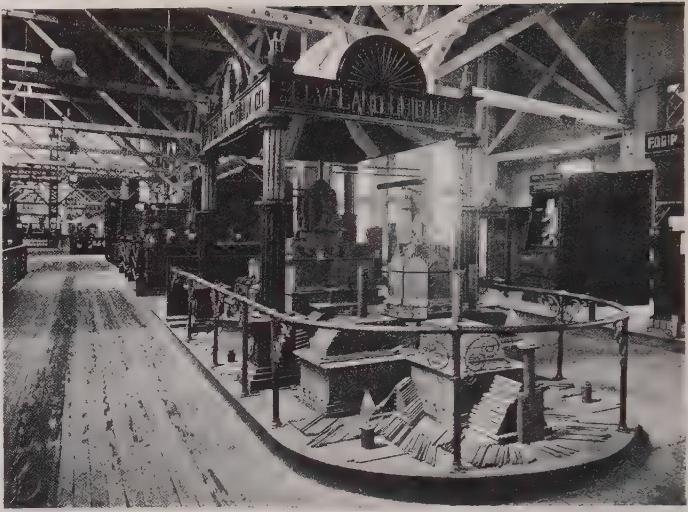

GRAY'S TELAUTOGRAPH

In the construction of electrical apparatus, as of other machinery, belting plays an important part, and here are on exposition many varieties specially made for operating dynamos and engines. Some of the belts are fastened with cement, and others with wire screws, but as a rule belting for heavy machinery should be perforated, and of such there is a large collection. By a New Hampshire firm is exhibited what is claimed to be the largest piece of link-belting in the world, 200 feet long by five in width, with a weight of 4,200 pounds, and in the construction of which were used more than 400,000 pieces of leather and metal.

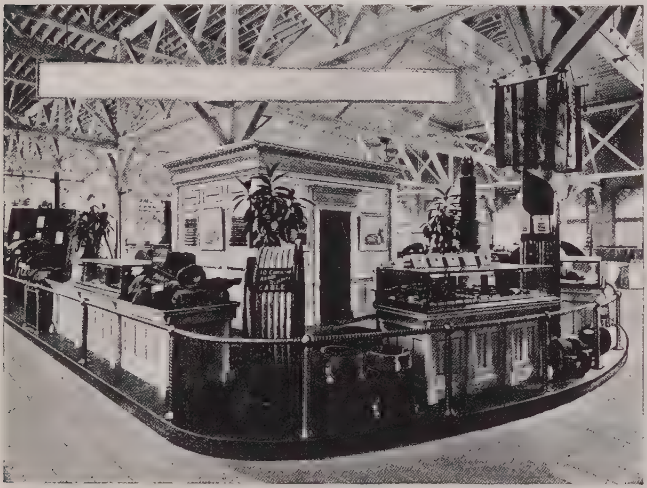
Of the special mechanisms displayed in the galleries there are also a few exhibitors on the ground floor, their groups including appliances for lighting purposes, for surgery, dentistry, and the diagnosis of diseases. Among the first is a small battery and spark coil which can be attached to burners and used for lighting or turning off gas. This, it is claimed, is an economical device, for the battery will last a year, and can be replaced for twenty-five cents. The largest exhibits of surgical and medical instruments are by a New York company, which confines itself to such as are used for cauterizing and diagnosis, and by a Philadelphia establishment which also covers this ground, and produces besides, small dynamos, batteries, coils, condensers, voltmeters, testing keys, and the numerous minor forms of electric apparatus used by educational institutions.


EDISON'S PHONOGRAPH

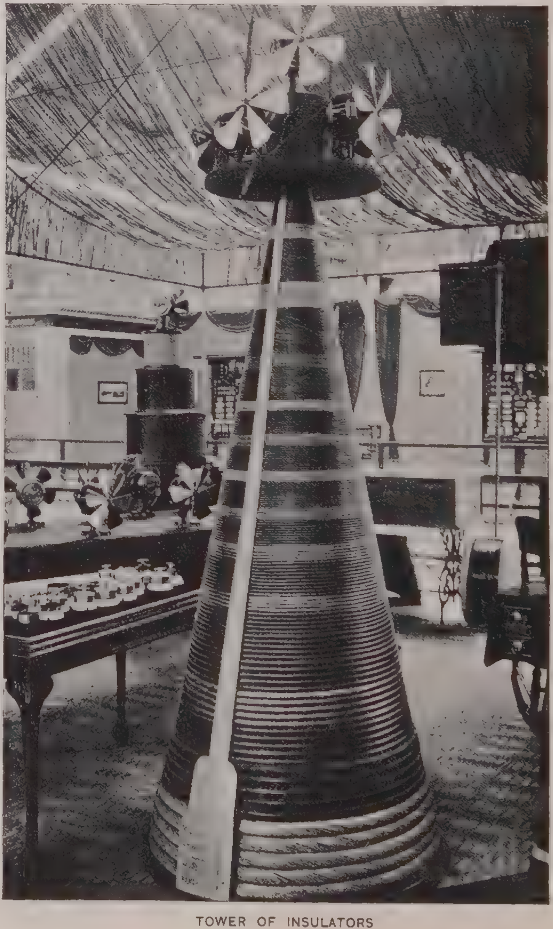
In the western galleries of the Electricity building are some of the most interesting of its contents, for here are several of the more remarkable among recent inventions. First of all may be mentioned the telautograph of Elisha Gray, who shares the honors with Edison and Bell in the domain of electricity. In 1887 he completed and later simplified the machine by which fac-simile writings or drawings are transmitted. As now exhibited, it consists of two instruments at either end of the telegraph line, both contained in a wooden case somewhat smaller than a type-writing machine. To the transmitter is attached a pencil, and near its point is a collar, to the opposite sides of which are fastened two silken cords, passing thence at right angles around a small drum, revolving on a vertical shaft, to which is attached a toothed wheel, the latter, as it turns with every motion of the pencil, acting on the wire with which it is in contact. Two wires are thus required to transmit the writing, the escapement wheel of the receiving instrument responding to every motion of the drum and the toothed wheel of the transmitter. At the receiving end of the line the order of the mechanism is reversed, the wheels being mounted on the shafts above the drums, with cords running from the latter to aluminum pens of the self-feeding or fountain type. As the wheels and drums are of the same size, the record made by the receiver is a fac-simile of the transmitted manuscript. The invention is of special value not only to business men, but to journalists, and those engaged in the detection of criminals.

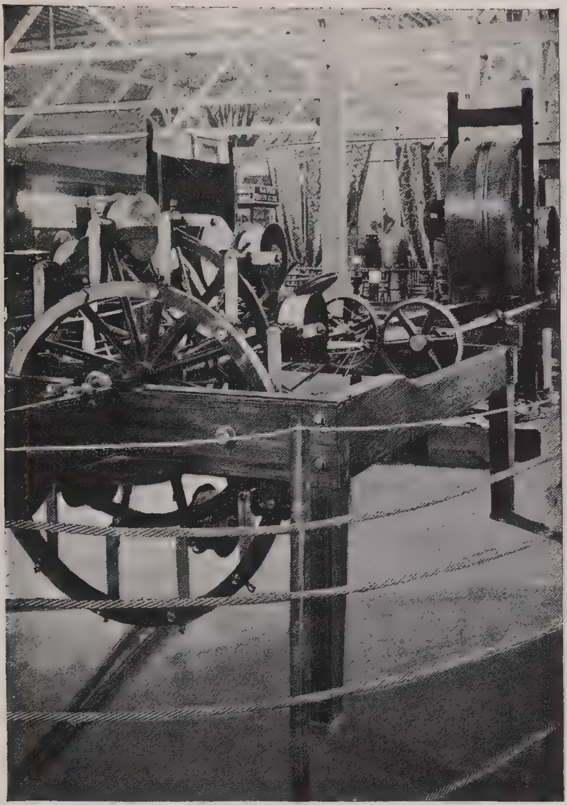

TEMPLE BUILT OF CARBONS

In addition to the Edison exhibits of electrical appliances, forming a portion of the General Electric company's display, is a section in the southwest gallery containing the instruments of the Edison Manufacturing company; and in this locality, more perhaps than elsewhere in the Exposition, is represented the genius of the inventor. When first it was reported that Edison had constructed a machine which would store conversations, speeches, songs, orchestral music, and any other sounds given into its keeping, and reproduce them at any future time there were many who refused to believe it, and not until his phonographs were displayed at the Paris Exposition of 1889, were all the skeptics converted. Since that date the sheet of tin foil then used for the purpose has given place to the hollow cylinder of wax, upon which, as it revolves, the point of the diaphgram cuts the lines of sound. Apart from the amusement derived from this machine, it is rapidly finding favor among professional and business men, taking the place of the amanuensis, while through its records scientists are enabled to make a more thorough investigation as to the nature of wave sounds.


DAY'S KERITE PAVILION

In a brilliantly lighted pavilion is the ingenious exhibit of the Commercial Cable company, representing an enterprise founded nearly a decade ago by John W. Mackay, of California, and James Gordon Bennett, of New York. In general terms, it consists of a working model of their system, showing automatic transmitters, recorders, and other instruments of most approved and modern type. The hair lines of the recording machine are produced at the rate of about one yard per minute, the message being ground out from the other end by the automatic sender. Instead of being transmitted from New York to Europe via Nova Scotia and Ireland, the words are simply conveyed across the pavilion, but for all practical purposes the illustration is complete. In this collection also "faults" cut out of cables, showing the nature of the accident or defect, one of the specimens having been crushed into an almost shapeless mass and nearly severed by an ice-floe. There are also instruments for detecting breaks and injuries from whatever cause with a

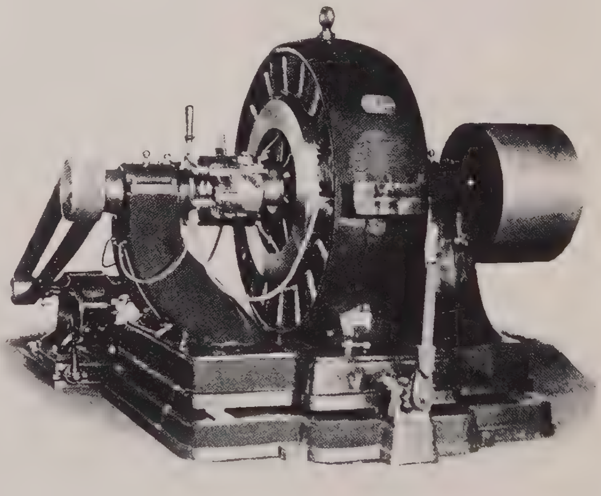

TOWER OF INSULATORS


CABLE TWISTING MACHINE

machine that registers the amount of resistance which the current meets in passing through a given cable, each mile of the line being divided into units of resistance. When a break occurs in the current, the amount of resistance remaining is divided by the number of units to a mile, and thus the exact point of the damage is ascertained. In the centre of the group is a handsome model of the company's repair ship, *Mackay-Bennett*, all the cable machinery on deck being a reproduction of the actual apparatus, and illustrating the process of picking up and laying cables. Specimens of perfect cables are also shown, one of the latest pattern being intended for shallow waters, and to resist rough usage, for which purpose it is covered with short sections of heavy steel tubing, so adjusted as not to impair its flexibility.

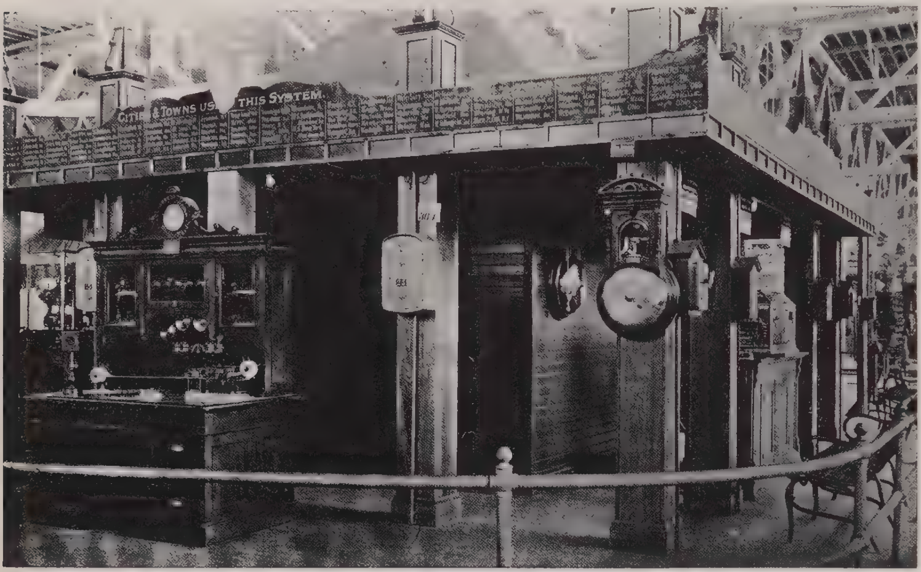
As already stated, the majority of the electrical instruments used in surgery and dentistry, and in the treatment of various physical ailments, are to be found in the galleries. One of the most elaborate exhibits is that of a Chicago physician, whose specialty is an electric belt for which he claims wonderful cures of nervous affections. However this may be, the observer cannot fail to admire the pavilion in which he displays his apparatus. Adjacent to the Edison collection, a portion of the space is occupied by a handsomely furnished parlor, in which are valuable oil paintings. Near by is the exhibit of an electric medical supply company, consisting of stethoscopes, batteries, and appliances for electric treatment, cautery apparatus, and special contrivances used in surgery or dentistry. Among other curiosities is a small rubber cylinder containing a galvanic battery and an inhaler, designed to relieve the sufferer from nervous and inflammatory disorders.

In this vicinity are several groups of electrical appliances which illustrate the investigations of scientists and manufacturers with a view to discover the best insulating agency. There are sheets and conduits, compounds displayed in bulk, and various kinds of paint which, it is claimed, will effectually shut off the electric current from all disturbing influences. One that has attracted much attention is known as isolatine, and is exhibited by a New York house, which also shows the many chemical substances used in the manufacture and operation of electrical appliances.


DYNAMO OF FORT WAYNE COMPANY

Elsewhere in this neighborhood may be studied the processes of gold and silver plating by electricity, and a simple yet effective machine by which any metal may be automatically engraved through the same agency. The letters are securely clamped, and as the stylus follows their outlines an electric current is formed, and a corresponding motion imparted to the graver. Little practice is required to operate the machine with satisfactory results for the simpler kinds of work. In these western galleries are also electric doors, automatic guest calls for hotels, burglar alarms, and clocks which record the rounds of the night watchman, such as are used by the government, and in the buildings of the Exposition.

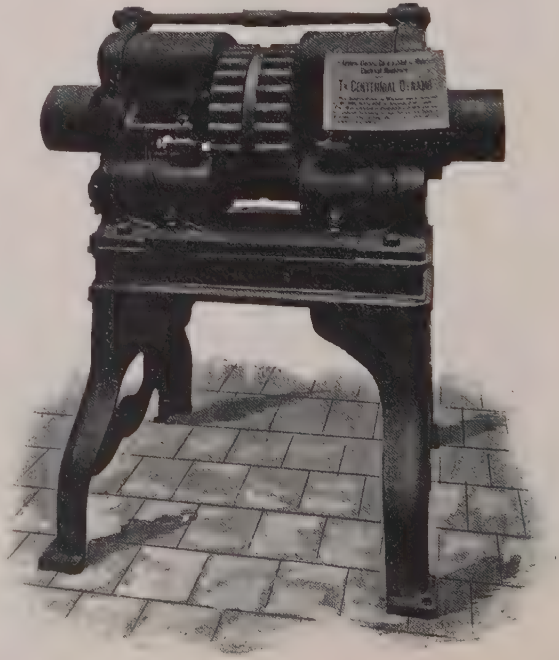
Close at hand one may study the system of an electric signal company; in a neat railway model marked "dangerous;" he may have a suit of clothes cut by an electric machine, or may seat himself in an easy chair while his boots are polished by electric brushes. Here also is an electric incubator, with eggs in process of hatching. In one is a barely perceptible palpitation; another is heaving with suppressed activity; a third is partially opened, and from a fourth a pulp-like form has drawn itself partially into the world, and lays panting over its former prison walls, as if gathering strength to free itself. For hatching chickens by electricity, as compared with incubation by steam, the advantage is claimed that the needed temperature, a little over 100 degrees, can be made absolutely uniform, while the machine requires but little attention. From the time the egg is placed in the incubator until the chicken comes from the shell is an average period of nineteen days. Two jars of Mason batteries are sufficient to furnish the heat and operate the thermostat, the latter never varying more than one half of a degree. One of the most interesting features of this exhibit was the sealing of a machine containing a dozen eggs, which remained untouched until the chicken emerged in due time, and in as lively condition as though fostered by the mother hen.



POLICE AND FIRE TELEGRAPH APPARATUS

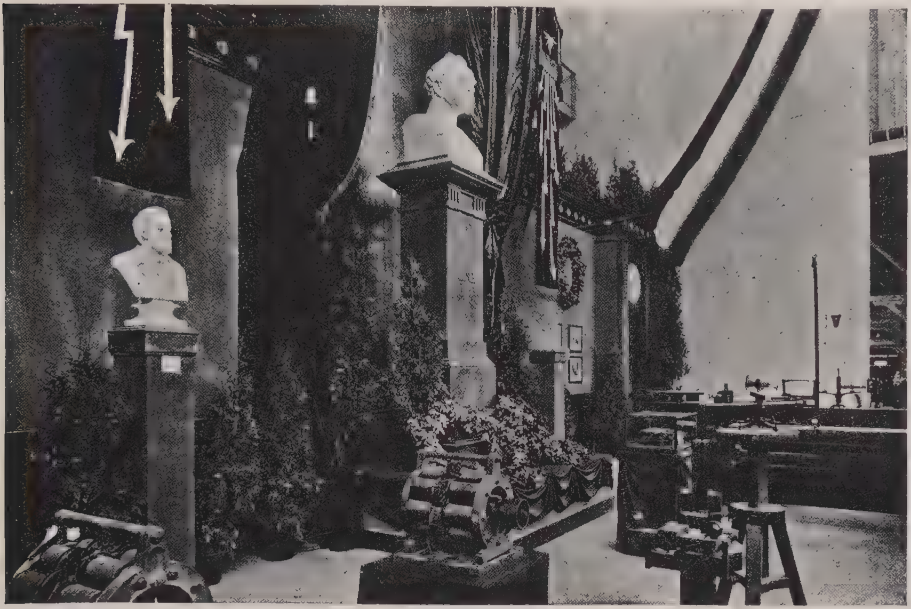
Three foreign powers have installed exhibits in the western galleries, Austria having chiefly a display of signal clocks and technical instruments, and Italy a small collection of china insulators contributed by a ceramic society of Milan. France has a large assortment of musical instruments, many of them overflow exhibits from the department of Liberal Arts, and having no relation to electricity. They consist of beautifully finished orchestral pieces, and include some fine specimens of inlaid work in wood and pearl, showing what may be done with pianos and other instruments in the way of cabinet decoration. There are several French inventions, some of which can be played as ordinary pianos, or by attaching them to other instruments. The music may be produced mechanically by turning a crank, or by electric self-acting machinery, and when the harmonies are combined the effect is often pleasing. More than fifty pianos are here, ranging in price from a few hundred to several thousand dollars. Of the new styles for which superiority is claimed, one has a frame of pure steel, and there is a French horn whose mouth is beaten from a solid piece of brass. In the gallery opposite this group is a row of tastefully furnished booths, the headquarters of the periodicals in the United States whose special field is electricity.

The principle that heat is generated by resistance to the electric current is illustrated in several portions of the building. Ovens and furnaces, and heating apparatus for railways, houses, factories, and public buildings, are exhibited on the ground floor, where also, as has been said, several companies show how welding may be accomplished by electricity. Other heating appliances are found in the galleries, a Wisconsin company which deals in novelties exhibiting a hair curler heated by electricity. But the most interesting application of this principle may be studied in the north gallery, where the housekeeper may see how her home can be comfortably warmed by electricity, and how her cooking may be done expeditiously and scientifically. The electric ovens are lined with wood and asbestos, which keep the heat within, and are supplied with doors of mica, and incandescent lamps and thermometers for ascertaining the temperature, and experimenting in all branches of cookery. As in other appliances, the electric current is governed by switches, the griddles, kettles, coffee-pots tea-pots, flat-irons, and all other utensils having enamelled bottoms, in which are imbedded small copper wires. When the current is turned on and passes along the wires, the resistance offered by the enamel produces heat, which can be easily regulated and directed. For instance, in roasting beef, if one side of the piece is browning more rapidly than the other, instead of taking it out and turning it, the current is simply increased above or below as the case may require. The electric flat-irons weigh about eight



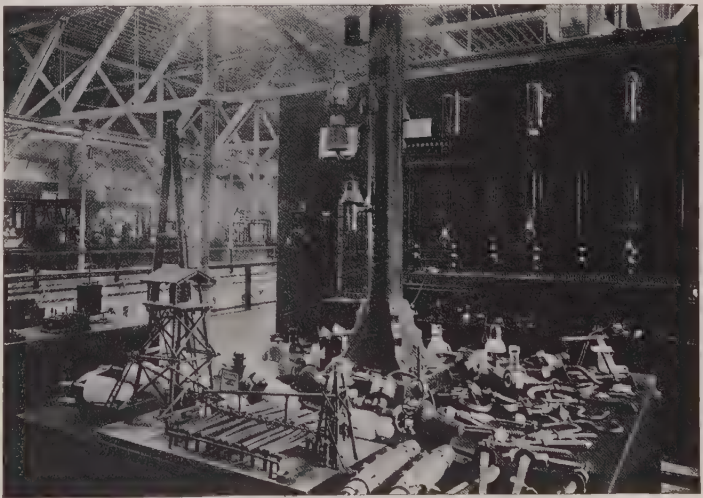
pounds, their upper portions being composed of non-conducting substances. Of all the companies which illustrate this phase of household economy, the Ansonia, of Chicago, has the most complete exhibit, presenting besides a display of cables, switches, batteries, motors, and a historical collection, including, as is claimed, the first of dynamos.

In the south gallery opposite are miscellaneous exhibits, one of which, by a Philadelphia manufacturer, is specially deserving of note. Upon an arched wall space, having a background of light blue, is a large eccentric, composed entirely of switches made by the company, and upon a small display board are the various patterns representing the evolution of these appliances. The first is one of a hundred made by means of a hand drill, hammer, and chisel, the later varieties, composed of porcelain and English ivory china, being of elegant workmanship, and forming a striking contrast to the others. Among the exhibits in this portion of the building may be mentioned that of a New York house, which presents many fine specimens of photo-engraving and electrotyping, the display being of plates only; the large pavilion also adjoining containing several cases of finely wrought instruments.


GERMAN HISTORICAL COLLECTION

In the southeastern galleries is a pavilion surrounded by great coils of cable, and masses of a carbon-like substance, the latter the crude form of an insulating material known as kerite. The exhibitors manufacture insulating tapes and cables for underground and submarine use. A New York firm builds a cabin of wire ducts or conduits, and a Cleveland company erects a pillared structure composed of carbon, with pyramids and other forms within and around it. A manufactory of the same city occupies a considerable space with specimens of its handiwork in polished aluminum, brass, and nickel, arranged upon a large sample board which forms a background to the section. The specialty is a boiler alarm, which may be either in the form of a steam whistle or an electric gong, the danger signal being given when the water reaches the highest gauge, and the float raising the valve lever which releases the mechanism.

Safety appliances for the public are seen in the many devices of the telegraph systems which have been adopted by the fire and police departments of all large cities. A New York company which has furnished complete telephone and signal systems for many large cities exhibits its apparatus around a square pavilion, on whose cornices are the names of municipalities in which they are used. Near this is a booth from which float the national colors of Brazil, whose government manufactures its own telegraph and telephone instruments, as here represented. A large map is displayed locating the telegraph lines of the republic, and in book and pamphlet form is described the present condition of the system, and its development through native skill and ingenuity.


GERMAN ELECTRIC APPARATUS, TELEPHONES, ETC.

The exhibit of the Western Union Telegraph company is contained in a large plain pavilion, over whose main entrance are the words, "What hath God wrought," forming the first telegraphic message sent by Samuel Morse. In a case within is a photograph of this message, and the original Morse machine, side by side with the perfected instrument of 1893. Several portraits of the great inventor are hung upon the walls, with those of Cyrus W. Field, the father of the submarine telegraph system, and Thomas T. Eckert, who succeeded Norvin Green as president of the company. The pavilion also contains busts of Morse by the sculptor Greenough, and of Field, by Hartley. Several of Field's medals and other personal souvenirs are included in the collection, together with a reproduction of the *Great Eastern*, which laid the first cable, the model being loaned by one of her commanders, with various apparatus showing the workings of the system, now some quarter of a century old. On one of the maps are indicated the locations of the Western Union lines, which include 750,000 miles of wire; and on another is a model in relief of the bed of the Atlantic ocean, in which may be traced the systems operated by the Western Union, Anglo-American, Mackay-Bennett, and other submarine companies. This is the first profile chart of the kind, and was made by Captain Dutton, formerly of the cable ship *Faraday*, of which also a model may be seen in the company's pavilion. But perhaps the most attractive exhibit is the huge, rusty grapnel, with its five prongs, which in 1866 recovered the cable lost during the previous year in nearly 2,000 fathoms of water. The cable had parted 1,100 miles from Valentia; the attempt to recover it was abandoned for a time, and a new line constructed.

With the exception of the Western Union's exhibit, and a small display of dry batteries, Germany occupies all the northeastern galleries with her well arranged collections. One large department is devoted to the exposition of optical, surgical, electro-medical, and scientific apparatus. A curious exhibit is that of artificial eyes, some of them such exact imitations of nature that when examined from different positions their pupils appear to dilate or contract. Another collection illustrates the diseases peculiar to the human eye, and its normal condition as observed in the German, Slav, Roman, Gaul, Mongolian, and Negro. In this section are some finely executed anatomical models, respiratory apparatus, a large operating table, and a complete collection of surgical instruments, the last furnished by the purveyor to the Prussian armies. More picturesque than these groups is the exhibit made by the German postal service, consisting of model post and telegraph offices, as well as reproductions of many in operation, and articles which constitute the entire working outfit of the department. There are models of telegraph towers and of imperial postal cars; telegraph instruments of the Hughes type, upon which the operators play as if upon pianos; telephones of German make, cumbersome as compared with those of American manufacture, and maps showing the distribution of telegraph lines and post-offices throughout the empire. Telephones enter largely into the system developed in Germany, with some 80,000 in use. An important factor of the postal service is the pneumatic tube, and in this department is a miniature plant showing its operations. In another section are models of mail coaches, representative of early and modern times, while here is also illustrated the service of mounted messengers established along the river Spree in the fourteenth century.

The portion of the gallery which is above the eastern entrance to the building has been transformed into a court, approached by a broad stairway, the background and dais being festooned in crimson and gold, and bordered with evergreens, showing for its central object a bronze bust, mounted upon a massive pedestal, of the late Werner von Siemens, the famous German electrician and inventor. On either side are busts of Sœmmerring, announced as the inventor of the first galvanized telegraph, in 1809, and of Reis, inventor of the first telephone, in 1861. In the background also are medallions of Gauss and Weber, proclaimed as the joint inventors of the first electro-magnetic telegraph, operated in Göttingen in 1833. Fronting the busts and medallions, and arranged on the ledges of the enclosure, are the instruments, or their reproductions, designed to illustrate the historical development of the application of electricity in Germany. Here is the magnetic needle telegraph of Stöhrer, 1817, Reis' telephone apparatus, and a number of inventions by Siemens, including the dynamo of 1866, and his instruments for telegraphic printing and writing. There are also collections of ringing apparatus, electrical appliances and signals for railroads, lighting machines, samples of cables chronologically arranged, indicators, alarms, stone drills, mineral separators, and clocks, with other mechanisms showing that the Germans have won for themselves a leading rank in every department of electrical science and invention.

World's Fair Miscellany.— The first general illumination of the Electricity building was on the evening of the 31st of May, and attracted many thousands of spectators. By eight o'clock the structure was one blaze of light, with myriads of incandescent lamps with revolving wheels displaying all the colors of the rainbow in ever-changing hues, and with unseen pens writing mysterious inscriptions on the walls in letters of fire. But in the very centre of the building was a huge shrouded figure which loomed ghost-like almost to a level with the rafters. Presently the chief of the department stepped forward; a moment later the shroud was withdrawn, and the Edison tower and the classic pavilion at its base stood revealed in all their cold, chaste beauty of outline. But for a few seconds only; the glare of search-lights focused upon them, causing their dark surface to shine with a dazzling radiance. Then the crystal bulb at the top burst into flame, flashing like a crown of diamonds; and finally the entire column was arrayed in robes of purple light like a pillar of fire. It was the very apotheosis of electricity, and by a thousand voices was shouted the name of him by whom these marvels had been wrought.

The illuminations of grounds and buildings begun in May, were continued throughout the term of the Fair, at first on alternate nights, and then every night in the week except Sunday nights. Occasionally the admissions after dark were larger than during the day; but as the novelty wore off, and the average daily attendance gradually increased from 20,000 or 30,000 to 150,000, the proportion was not maintained. During one of the first illuminations, Machinery hall narrowly escaped destruction by fire. The shed that inclosed the machinery of the Westinghouse company's engines, by which at the moment power was furnished, was set ablaze through the burning out of one of the connections, caused by the pressure on the wires. Only through the promptitude and coolness of the men in charge a conflagration was averted which would have swept the building out of existence.

The light for the fountains with their prismatic hues and chameleon-like changes of color, was produced in a subterraneous chamber, with which the fountains were connected. The lamps resembled the search-lights on board a man-of-war, except that for the lens used at sea was substituted a silver-lined parabolic reflector, from which the rays were shot upward for a distance of 150 feet. The lighting capacity of the lamps was controlled by a mechanism similar to clock-work, and could be intensified to a brilliancy of 350,000 candle-power. The water effects were also regulated in this mystic chamber, to the orifices of which a nozzle was attached, and through it the water projected in columns, jets, or sprays, with electric light playing upon them in varying hues from color screens beneath.

While electric light and power have been prominent factors at former expositions, they have never been so largely used and applied to so many purposes as at the Chicago Fair. At the Paris Exposition of 1879 there were some 1,500 incandescent lamps, and at the New Orleans Cotton Centennial in 1881 both arc and incandescent lamps were utilized to good effect. At the latter it was for the first time demonstrated that under this clear, white light, the delicate tints of flowers are almost as plainly visible as beneath the noon-day sun. At the Louisville Exhibition of 1883 there were 6,000 Edison lights, and at the one held in Paris in 1889, there were 1,000 arc and 9,000 incandescent lamps, both considered at the time a wonderful display of electric lighting. But in the buildings and grounds at Jackson park there were 6,000 arc and 120,000 incandescent lamps, the former each of 2,000 candle-power, while motive force of from 4,000 to 5,000 horse power was generated for purposes mentioned in the text.

In the Electrical building was installed apparatus of all descriptions excepting generators, which were located elsewhere. Power, for whatever purpose used, was furnished and transmitted, as I have said, from the station at Machinery hall, the plant being so constructed as to be complete in itself, and yet composed of numerous smaller plants.

The floor of the building was intended to sustain a minimum weight of 150 pounds to the square foot. By railroad derricks machinery of a weight not exceeding fifteen tons could be moved into position, and generating machinery up to a weight of twenty-two and a half tons could be handled by travelling cranes.

Neither for illumination nor other purposes were any of the wires placed above ground, all being fastened on insulators inclosed by subterraneous conduits. The arc lights scattered throughout the park were supported by pillars or masts twelve feet high, most of them 50 to 75 feet apart, and all arranged with a view to landscape effect.

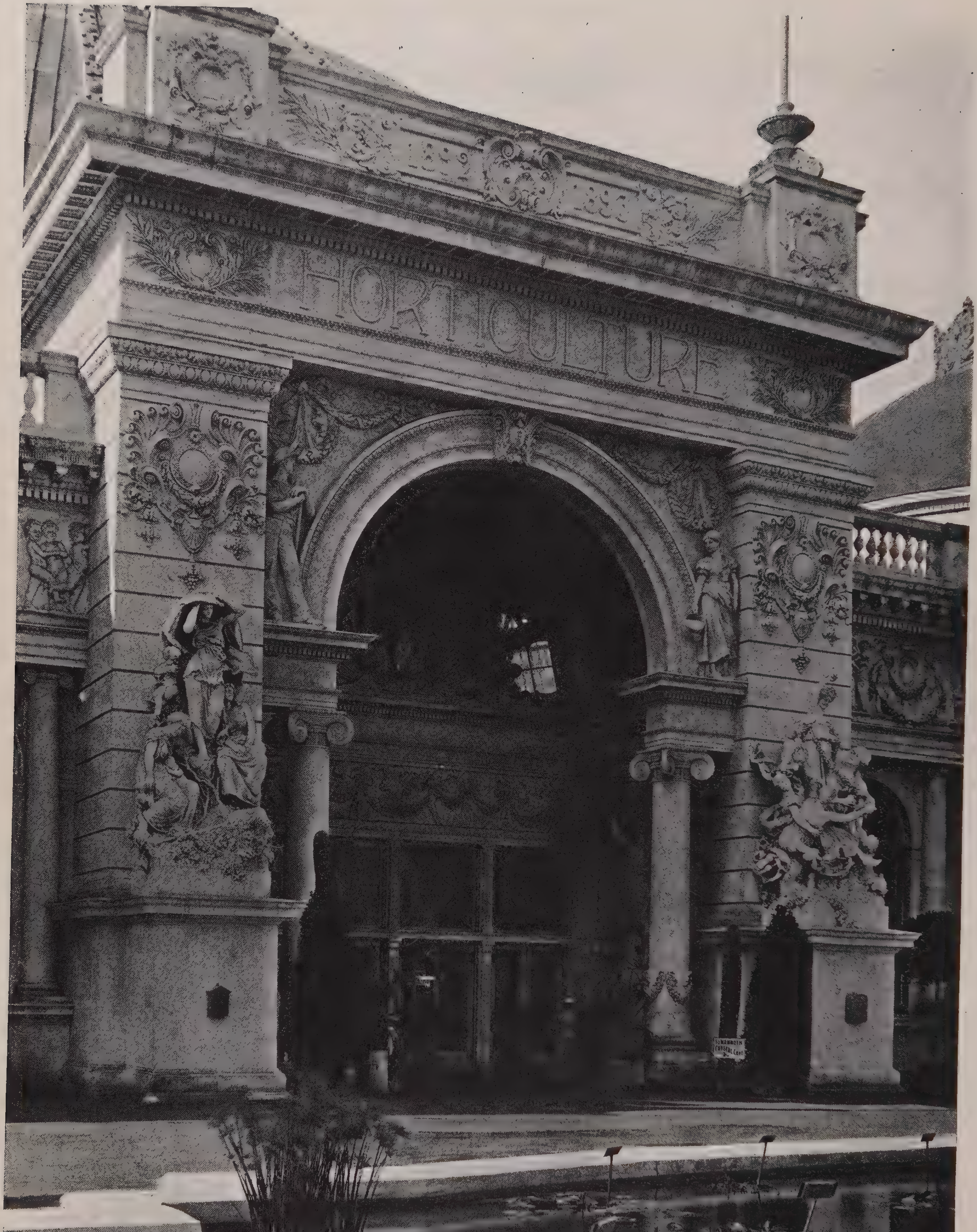
Side by side with the Edison exhibit of incandescent lamps was a case containing many sections of fibrous vegetable growths, used by the inventor in his search for the substance best fitted for a lamp filament. The selection finally made was that of a Japanese bamboo, which is now extensively cultivated on special plantations. It is said that in arriving at this result, Edison travelled many thousands of miles, and expended at least $200,000.

Near the pavilion of the Commercial Cable company a Fort Wayne establishment had an exhibit which overtopped all others in the galleries. It consisted of iron towers and poles such as are used in railroad construction, and for street lighting.

Nikola Tesla, the so-called wizard of physics, whose current motors are mentioned in connection with the Westinghouse company's exhibits, is one of the youngest of our great electrical scientists, and yet a man of world-wide repute. His fame rests mainly on his multiphase alternating motors, whereby are produced high potential currents of remarkable frequency. On the 25th of August he lectured in the assembly room of Agricultural hall before an audience consisting largely of electrical engineers and scientists. During his discourse he exhibited a motor or oscillator driven by compressed air, which made 80 vibrations to the second, stating that he had made others capable of several thousand vibrations to the second. To this he attached a dynamo small enough to be slipped into the pocket, and yet of considerable power.

Elsewhere is noticed the exhibit by the seismological laboratory of the Imperial university of Japan. As stated, the first instrument to record motions of the earth was invented by a Japanese more than seventeen and a half centuries ago, but it was not until 1875 that an observatory was built for the purpose in Tokio. The first instrument used was the one invented by Palmieri, the director of the observatory on Mount Vesuvius; but since 1884 this has been replaced by the Milne instrument, which records horizontal and vertical motions, with the time and duration of shocks. This year also marks the commencement of a system of investigation covering the entire empire, the observatory publishing guides for noting and reporting seismic phenomena, with or without the aid of instruments. These were distributed among hundreds of officials and others whose reports were transmitted free by the post-office. From these maps have been made showing the disturbed areas of the 3,800 earthquakes which have occurred throughout the empire from 1885 to 1890, as well as their relative intensity. Observations since that year have greatly added to previous records, especially those of the great earthquake of October 28, 1891. In this the centre of disturbance was almost in the middle of the main island, though with shocks more or less severe almost throughout the empire. Within a comparatively small radius over 7,000 people were killed, and 142,000 houses totally destroyed. The ground was rent and cracked, permanently depressed or upheaved, thousands of landslips were produced, water and sand were ejected, multitudes of embankments shattered, railway lines twisted, and bridges hurled into rivers, which, with other havoc, was graphically depicted in the Japanese section of the Electricity building.

The enormous switchboard exhibited by the Brush Electric company was sold through its agents in Yokohama for the use of a power station now being erected in Manila, Philippine Islands, the company also furnishing several dynamos.



EAST ENTRANCE, HORTICULTURAL BUILDING

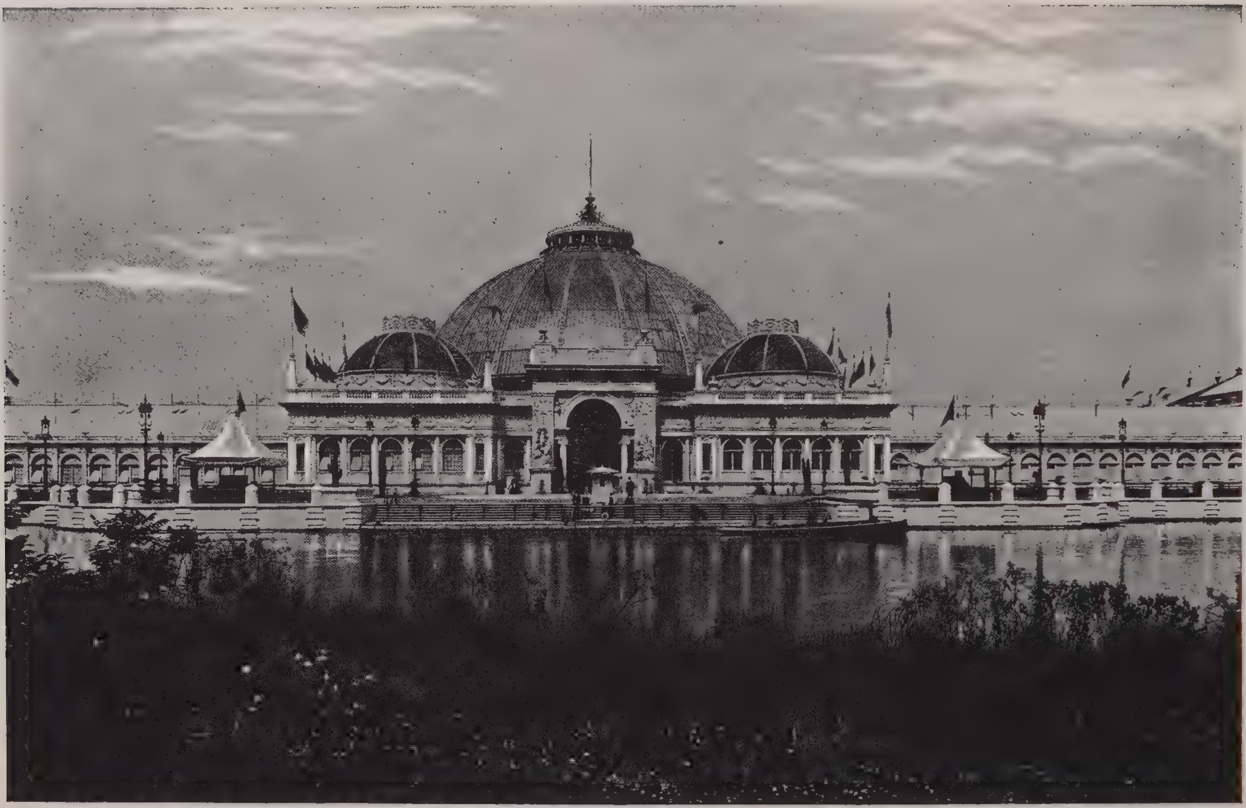
CHAPTER THE FIFTEENTH

HORTICULTURE AND FORESTRY

TO him who reads aright the lessons of the Fair, one of the most significant is that the nations of the world are coming nearer together than ever before, and among its highest aims is to hasten this process of unification. Through the activities of man, even the vegetable kingdom is becoming, as it were, a universal brotherhood, and intelligently viewed, the Horticultural department not only affords an opportunity for comparing the products and methods of foreign lands with those of the United States, but offers a panoramic view of the entire vegetable world, its scenes of course shifting with the changing seasons, and though here described in the present tense, displaying innumerable phases such as neither pen nor picture can delineate.

Under the general term horticulture are included, for the purposes of the Exposition, viticulture, pomology, and floriculture, wines, fruits, and flowers being displayed in all stages of development. By means of photographs, books, and appliances are illustrated the modern management of vineyards, and methods of manufacture, bottling, packing, and shipping. In the pomological sections are fresh, dried, preserved, and canned fruits. In a miscellaneous department are nuts, jellies, vinegars, ciders, etc. Here also are mills and presses, and the latest inventions for drying and preserving fruit. Floriculture appears, decked in robes of beauty, gigantic palms and tropical plants forming a background to delicate ferns and flowers. Another subdivision consists of floral designs and flower stands, with ornamental plants and grasses, and literature relating to their growth and training. Vegetables and seeds, with all the best appliances for ornamental and landscape gardening, are also grouped under the general heading of horticulture.

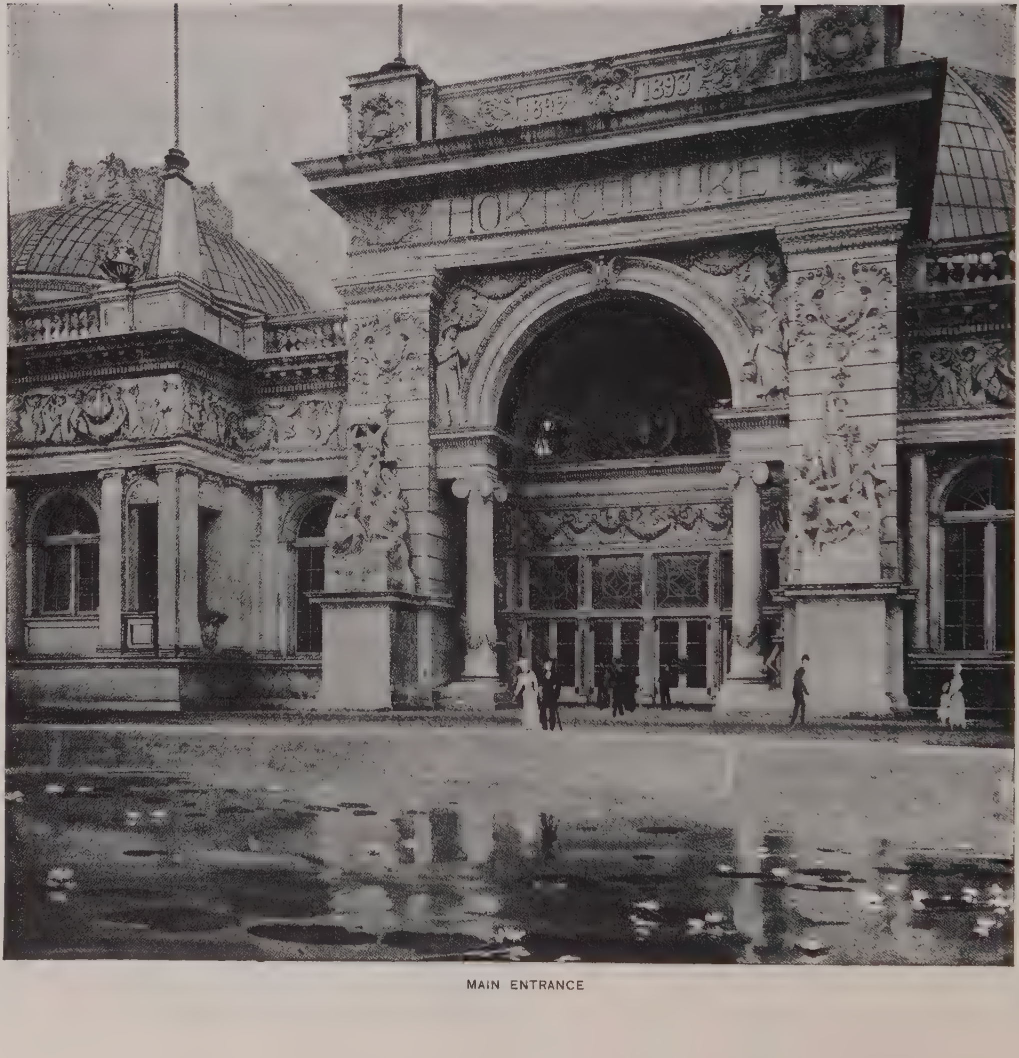
Fronting 1,000 feet on the lagoon, and with an extreme width of 250 feet, the Horticultural building covers an area of five and three-quarter acres, and with its greenhouses, and other adjuncts, of eleven acres. But as to the size of this structure, and of the other principal structures of the Fair, a better idea may be conveyed by stating that the former, though one of the smallest of the group, is almost as large as the Crystal Palace, in which has been partially preserved the home of the London Exhibition of



HORTICULTURAL BUILDING, FROM WOODED ISLAND

1851, and that it contains some 90,000 feet more of exhibiting space than all the three edifices used for similar purposes at the Philadelphia, New Orleans, and the last of the Paris expositions.

While intended mainly as a spacious conservatory, in structural design the Horticultural hall by no means suffers from comparison with its more ambitious neighbors. In a word its plan may be stated as including a central pavilion, more than 200 feet square, surmounted by a crystal dome, and connected with smaller pavilions at either end by two longitudinal series of galleries, glass roofed, from 50 to 70 feet in width, and inclosing garden courts, each somewhat more than half an acre in extent. A feature of the edifice is its decoration in alto and basso relievo, the frieze



MAIN ENTRANCE

1 AUSTRALIAN PLANTS
2 AUSTRALIAN TREE FERN, 27 FEET HIGH

3 CACTUS FROM U. S. BOTANICAL GARDENS, WASHINGTON, D. C.

4 STAG HORN FERN
5 SOUTH SEA ISLAND TREE FERN

EXIT FROM CRYSTAL CAVE

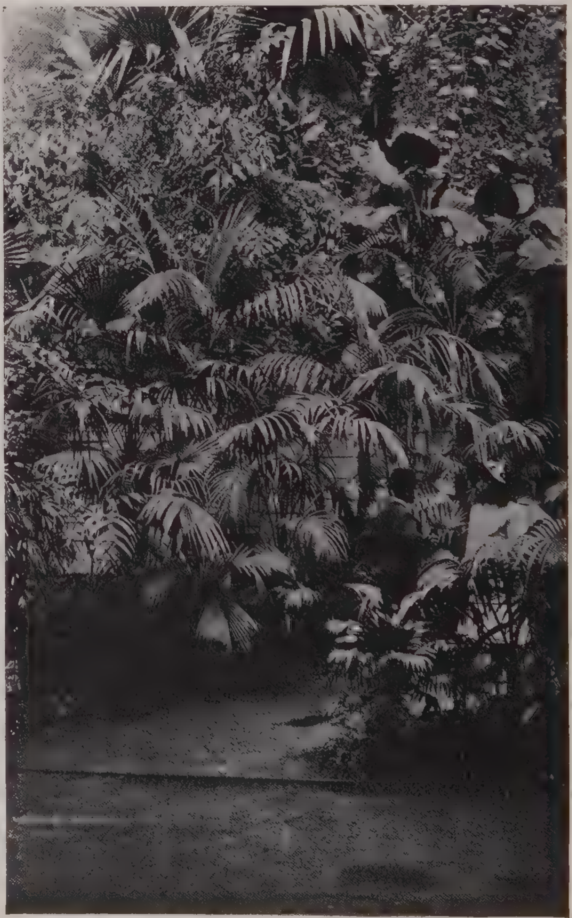
which is six feet in height, and extends along three of its sides, displaying the handiwork of a cunning artificer.

As to interior effect the arrangement of the building is admirable, and if exception has been taken to the depression of the dome, whose height of 115 feet is barely two-thirds of its diameter, it will be observed that the long, low façades of the conservatory forbid such towering aspirations as are not inappropriate to the more substantial structures of the Exposition. Moreover this seeming disproportion is relieved by the curved glass roofs of the galleries on either side, by the lower domes at its base, and by the crown with which it is surmounted.

By the architects, Jenney and Mundie of Chicago, was adopted in their decorative plan the style of the Venetian renaissance, while the walls of the front galleries and those which surround the side pavilions are divided by pilasters of the Ionic order into windowed bays, thus reducing the wall surface to the smallest possible area. At the principal entrance, from the terrace fronting on the lagoon, is a triumphal arch, the vestibule of which is profusely decorated with statuary, and on either side of the main pavilion are groups of sculpture fashioned by Lorado Taft, one representing the awakening of the flowers, and the other their repose at spring and autumn tide. These are among the most chaste and expressive of all the artistic embellishments of the Exposition buildings, and standing forth in bold relief under the vault of the central dome, form the complement of the architectural design.

From the promenade gallery encircling the dome, the hall itself, with its wealth of plant life and floral decoration, presents one of the most striking kaleidoscopic vistas contained in this city of wonderland. Rising nearly to the summit of the dome is a miniature mountain, gigantic ferns, and palms, creepers, and flowers of brilliant hue, giving to the scene a rich tropical aspect. Above are great hanging baskets, and at the base, around a border of green fringed with blossoms, the sago palm, Abyssinian banana, screw pine, and other striking forms of tropical vegetation. From the gallery also may be seen to excellent advantage the gigantic forest growths of Australia towering roofward like the pillars of a temple, and in a conservatory opposite the softer floral beauties of the United States.

If less picturesque, the central galleries furnish exhibits no less entertaining than those on the ground floor. Among them is a large collection of views of the botanic gardens in Sydney, New South Wales, which have sent so many of their treasures to the Fair. The gardens of the Imperial university at Tokio are also well represented by photographs, and another interesting feature is the artificial fruits of the Yokohama Gardeners' association. Photographs of famous gardens and nurseries in the United States, diagrams of public parks in Colorado, Oregon, and elsewhere, with the models of villa gardens which line other sections of the wall, indicate that a principal object of this gallery exhibit is to illustrate the latest methods of landscape gardening. Then there are richly stocked herbaria, especially from the western states, and thousands of pressed plants and flowers tastefully displayed in revolving frames. One of the most remarkable collections was made by a woman of Colorado, who for



WEST SECTION OF FERN MOUNTAIN

LOOKING INTO THE VITICULTURAL HALL

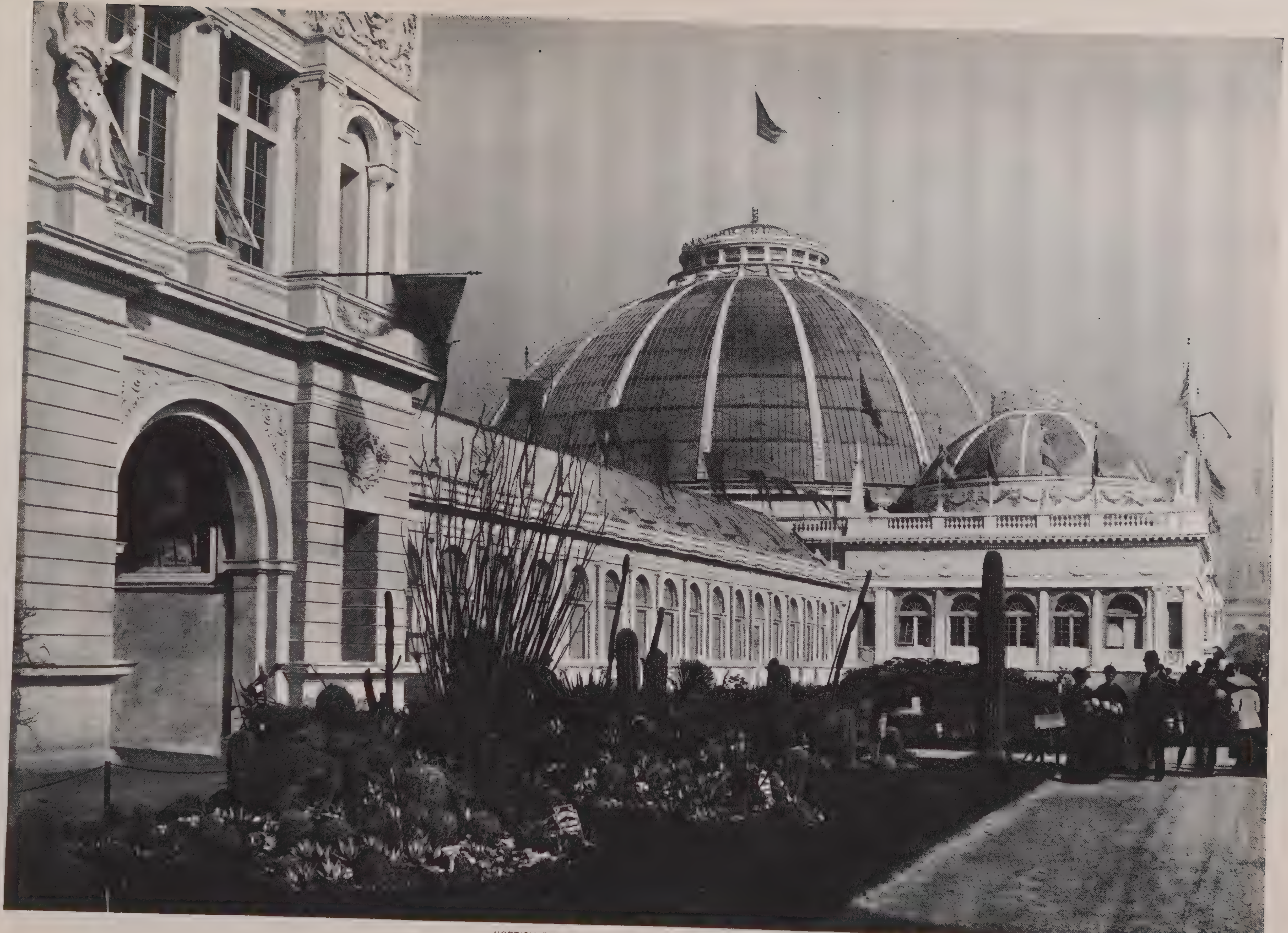
months climbed its lofty ranges, and travelled over foothills and plains, contributing in no less than a thousand varieties an almost complete display of its flora. The mouse-fungus, with rust, blight, mildew, rot, and all the pests and plagues of the vegetable kingdom are here exemplified, and there are odd conceits for fences, rustic vases, and other garden ornaments, with collections of dried grasses, and preserved flowers made into wreaths, baskets, and other designs.

Descending to the base of the miniature mountain the visitor finds in this neighborhood, almost side by side with tropical exhibits, special displays from New York, New Jersey, and Pennsylvania, the leading floricultural states. Palms from Australia and the Americas lift their graceful fronds, and here are represented the choicest treasures from the conservatories of millionaires, such men as the late Jay Gould, A. J. Drexel, George W. Child, and Erastus Corning. Here also an Indiana century plant first displayed its yellow flowers, with others of its kind on exposition, all under the great dome, and in the adjoining conservatory, while France shows the rich masses of rhododendrons in which she takes a national pride.

A broad avenue passes around the miniature mountain, and along its outer edge New York and Pennsylvania again present their floral displays. In one corner is an elegant booth in which are plants, hanging baskets, cut flowers, and floral ornaments and designs—a contribution from the empire state. A few steps further is a collection of New Jersey snap-dragons, and other insect devouring plants. In this locality is also a collection of plants from

UNDER THE DOME

FLORAL DEVICE IN ROTUNDA



HORTICULTURAL BUILDING, FROM SOUTHEAST CORNER

the executive mansion, at Washington, the most striking of which is the so-called crown of thorns.

Forming a portion of the New York display is a large model of the national capitol, constructed of Canadian thistles, and near this are several large beds of Pennsylvania cacti, one of them alone containing three hundred varieties. Stepping into a small chamber in the form of a cave beneath the mountain, we find here a miniature reproduction of the famous Black Hills cave in South Dakota, with the stalactites and crystals which form the cathedral chimes, the bridal chamber, and other well known features, all represented with remarkable accuracy.

Entering the southern conservatory from the rotunda, we find ourselves in the midst of a profuse display of orchids and ferns, presented mainly by the New Jersey firm of Pitcher and Manda, whose exhibits are a prominent feature in the floricultural department. The orchid groups, which include private collections from Albany, Philadelphia, Jersey City, and other localities, are in truth one of the leading attractions of Horticultural hall, but as a considerable proportion of the 4,000 or 5,000 existing species, with all their varied forms, their brilliant hues, and delicate odors, is here on exposition, a detailed description would be obviously out of place.

Further to the south the women of Texas have their exhibit, those of Galveston contributing Cape jasmines and sweet bay trees, while Laredo sends a large bed of cacti, both of which attract many visitors to this section. Missouri's display adjoins a grove of palms near the centre of the conservatory, and includes many rare and beautiful plants from the botanic gardens of St Louis. Here also Pennsylvania has another large exhibit; Massachusetts occupies a limited space, and other states have scattering contributions. In the Illinois display are fine specimens of the bay laurel, and Indiana has a flourishing group of begonias. In this conservatory of the states is also a bed of cacti representing the botanic gardens at the national capital.

Corresponding to these exhibits south of the central court, is one in the northern section showing the floricultural collections of foreign lands. In the centre are the huge tree ferns from Australia, some of them forty feet high, with other plants of that species whose leaves are in many fanciful shapes. Here also are the staghorn ferns, from seven to eight feet in diameter, and as many in height, clinging to trunks of teak-wood trees, whose vitality has been exhausted in their embrace. At their feet are more delicate ferns with mosses, grasses, and many of the creepers which grow in

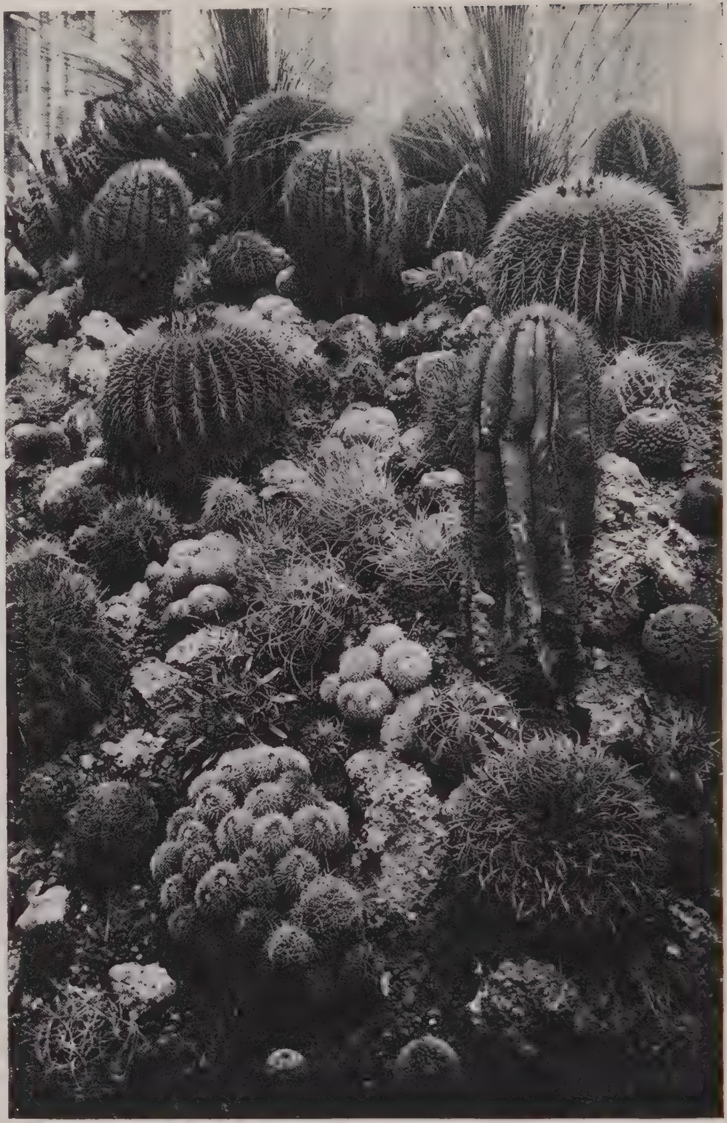
EXHIBIT FROM THE NATIONAL CAPITOL

profusion amid Australian forests. In the Canadian exhibit adjacent, Ontario has many varieties of palms and ferns, eighty in number, and most of them from the horticultural gardens at Toronto. Among the former, one of the most remarkable is known as the Sabal Anderson description. Of other trees and plants, including cacti, flowering shrubs, and ornamental leaf plants, there is also a large collection.

Further toward the north is the Japanese garden, arranged in the simple, artistic fashion for which that people is famous. A rustic bridge spans a small pond, filled with gold-fish, and fringed with water-lilies and ornamental plants. Near by are the quaintest of urns and vases, containing orchids and other floral treasures, with plants of all kinds, miniature hills, among which are clusters of sago-palms and models of animal life, with a rough stone wall covered with native evergreens, morning-glories, and creepers, and with colored sands arranged in geometrical figures, all forming a picture in which is substantially reproduced a portion of the Japanese imperial garden.

On the opposite side of the conservatory are beds of cacti from Mexico, arranged as single specimens or in conglomerate masses, and ranging in size from that of an apple to a bushel basket. Some appear like petrified porcupines, or spiny creatures of the deep; others are thin and starved, and still others seem as if they had lived upon the fat of the land.

ONTARIO PALMS



BED OF TEXAS CACTI

This exhibit, as well as the other cactus beds scattered throughout the department, is specially typical of America. One of the most prolific of the forty or fifty species is the elephant tooth cactus, bearing a flower like a rose or lilac, red or crimson fruit succeeding the blossom. The fig cactus is similar in shape to the fruit from which it is named, its pale yellow flowers giving place to an edible product resembling the gooseberry, which serves as food for the cochineal insect, and at times for the inhabitants of Mexico and Central America.

Beyond the cacti bloom the cannas and begonias of Great Britain, and the azaleas of Belgium and Germany. Especially noticeable is the German display, neatly and artistically grouped around a central fountain. At the upper end of the conservatory, beyond the banners of Australia, and the white and red flags of Japan, are the tropical plants of Trinidad, and above her exhibit rests, on a large pedestal, the golden lion of Britain.

Between the main hall, the pavilions, and their connecting curtains, are two spacious courts, the one to the south occupied by large basins or tanks filled with aquatic plants. In the northern court is a vault-like pavilion, 189 by 135 feet, constructed of iron, and stocked with South German wines. The façade and roof are adorned with appropriate statuary, and the walls are covered with paintings illustrating various scenes in the wine producing districts of the German empire. The vine-clad banks of the Rhine and the Necker, the famous district of Moselle, the wine industries of Baden and Alsace-Lorraine, are all depicted in graphic art, while plaster casts and a sparkling array of wines in bottles complete this display from the fatherland. The historic monument of Germania and the Rhenish castle of Ehrenfels are reproduced, as models, in the entrance hall of this structure. The exhibits of wine are arranged according to locality, each specimen being labelled, and grouped with reference to the vineyard, village, or district where it was produced.

Apart from this the collection of wines is in the southern extremity of Horticultural hall, where Spain, France, and Germany, California, Australia, and other countries vie with each other in the quality and artistic grouping of their exhibits. Spanish ports and sherries, fashioned into pyramids, are displayed in a gaudy pavilion, or series of arched, open structures. Sometimes the towers are formed of solid bottles; again the base is made of casks and barrels, with rows of bottles let into their sides. Within these glistening piles are real sherry wines from the Xerez district, the strong, dark vintages of Valencia, and lighter, sweeter grades from the Spanish sierras, from whose vineyards also come the grapes which are made into Malaga raisins.

A large portion of the French collection consists of sparkling champagnes, including a tastefully arranged exhibit from Rheims, its ancient home, and, with Epernay, still its most important centre. An immense bottle reaching nearly to the ceiling of the hall may be considered as a monument to the Benedictine monk, who, two centuries ago, gathered the wines from the districts surrounding Rheims, and by mixing them made the first champagne that history records. The white wines of the Sauterne and Gironde districts, the rosy Medocs, clarets, and Burgundies, and a dozen other brands appear in various devices, as contributions from exhibitors in Bordeaux, Marseilles, Paris, and Nancy. Cordials and mineral waters are also in plentiful supply, and models of machinery, as well as of vineyards in the famous districts of Medoc and Gironde, serve to break the monotony of endless rows of bottles. In photographs and charts are shown all the insects which injure the vine, and their mode of attacking it, the king of them all, the phylloxera, receiving the lion's share of attention.

The German display in the southern section of the hall is a large and massive exhibit, of more general character than the one already mentioned. Worthy of note are the sweet, mellow wines of Rhenish Bavaria, the red wines of the Ahr, and the stronger products of vineyards planted on the banks of the Rhine; but most of the principal wine-producing districts of the empire, with their output of nearly 100,000,000 gallons a year, are here represented. In this collection also is a large assortment of beers and brandies, of cider, temperance, and

AUSTRALIAN TREE FERNS

FROM THE GOULD CONSERVATORY, HORTICULTURAL HALL

MEXICAN EXHIBIT OF CACTI

all other beverages that find favor in the fatherland.

Adjacent to this, and in the southwestern corner of the viticultural pavilion, is the display of California wines, by far the largest and most attractive of our domestic collections, its effect increased by the skilful grouping of the exhibits and the ingenious structure which contains them. A red cedar pavilion, 40 feet in height, is fashioned so as to resemble one of her giant trees, the main entrance having the appearance of an archway built of rocks, while around the trunk are various figures emblematic of viticulture. The goddess of the vine is crowned with a tiara of vines and grapes, and toward her an Indian girl is approaching with fruit-laden basket. A padre, with spade in hand, represents an early stage of the industry, and a huge grizzly bear is a character in Californian history which requires no introduction. From the gallery a staircase leads into the pavilion, so that the visitor may pass either from the ground or upper floor to the exhibits within.

Passing through the main doorway, we pause for a moment before a large panoramic view of the Golden Gate and the harbor of which it is the portal. Then turning to the exhibits, we notice first of all the collective display of several of the largest vintners and viticulturists, whose cellars in San Francisco and elsewhere contain larger stores of wine than those which Hannibal wasted, when, on his march toward Rome, he bathed his horses' feet in the choicest vintages of Italy. Of some of the vineyards, covering their thousands of acres, there are paintings by local artists, with tablets and appropriate mottoes. A favorite corner of the viticultural hall is in the shape of a redwood tank, garlanded with vines, and forming, with its contents, the exhibit of several large producers of Sonoma county, prominent among whom is an Italian-Swiss colony. In a separate structure are also represented the great vineyards and cellars of the late Leland Stanford, at Vina, in the Sacramento valley, its court opening through an arched entrance way into a spacious vault, lined on either side with barrels of huge proportions. In pictures are also reproduced these famous vineyards and wine cellars, together with the bonded warehouse in which at times is stored $1,000,000 worth of brandy. From Napa, Sonoma, Santa Clara, Alameda, and other counties there are smaller exhibits, all contributing of their best toward a combined display representing one of the foremost of Californian industries.

Not the least valuable exhibit is that of the State Viticultural commission, consisting of

JAPANESE DWARF CEDAR

JAPANESE EXHIBIT

GERMAN FLORICULTURAL DISPLAY

practical and reliable descriptions of viticulture as pursued in California. On either side of its space are growing vines, above which are photographs of grape clusters, showing the best varieties for the production of wines, brandies, and raisins. Famous vineyards are also depictured, and in a colored series of state and county maps are shown the areas planted in many varieties of grapes.

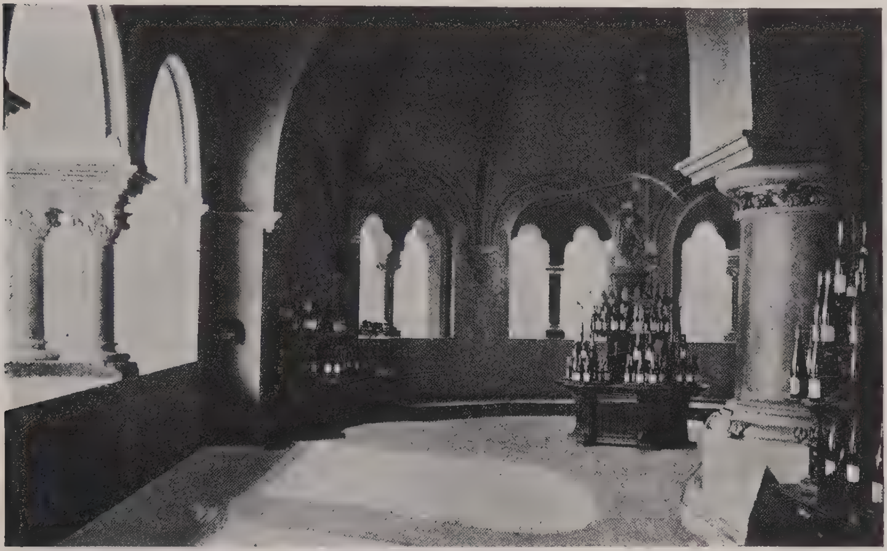
From a few hundred acres of vineyard planted by the padres and their neophytes during the pastoral days of California, the area under cultivation increased to nearly 200,000 acres in 1892, with more than 150,000,000 vines, yielding, in full maturity, an average of three or four tons to the acre, a ton of grapes producing about 120 gallons of wine. It is not until recent years that the viticultural interests of California have assumed any large proportions, or indeed that here were known either the art of producing marketable wines or the grapes best adapted to the purpose. As late as 1860 the bulk of her wines was made of mission grapes, such as the Franciscan fathers transplanted from Mexico, and from which was extracted a light colored beverage, heavy, and rank of flavor. Later, many foreign varieties were introduced, largely through the efforts of the commission; and presently wine-making was based on scientific methods, and became a fairly profitable industry. Then came over-production, for as yet the demand was only for local consumption; but gradually California wines gained a foothold in eastern and European countries, especially in France, where they are doctored and often returned in adulterated forms, to be sold under foreign labels at from three to five-fold their original cost. In 1881 more than 3,000,000 gallons were shipped to the Atlantic states; in 1890 more than 12,000,000 gallons were forwarded by rail or sea, and of the present output, averaging some 20,000,000 gallons a year of wine, and 1,500,000 of brandy, or more than one-half the entire yield of the United States, at least 70 per cent is shipped to eastern and foreign markets.

ELEPHANT EARS LILIES

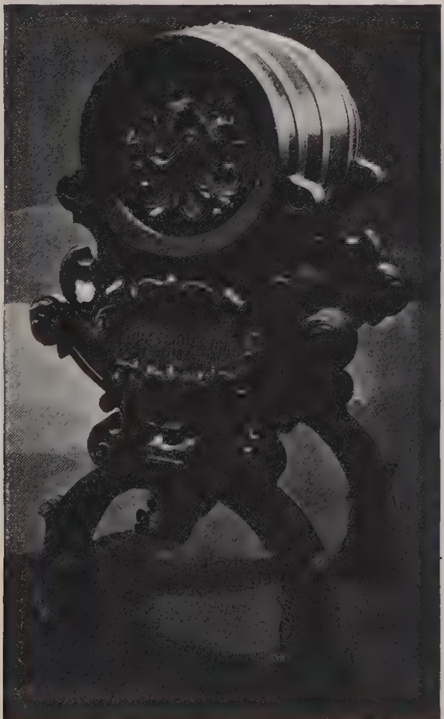
Aside from California, the most elaborate of domestic collections are from New York, Ohio, and Missouri. The dry wines, champagnes, and brandies of the empire state are especially noticeable; exhibitors from Ohio and the region bordering on Lake Erie group their specimens in and around an elaborate column of bottles, and two of the most prominent wine companies of Missouri show their samples in neat and tasteful pavilions. New Jersey is also well represented, and among her participants is one of the oldest of German wine makers in the United States. From Manassas, Virginia, comes a specimen of her vintages, and there is wine from a vineyard planted on the battle-field of Bull Run.

Near the French section are towers and pyramids of bottles filled with the red and white wines of New South Wales. Photographs of her vineyards show that they are large and thrifty; and here also the information is conveyed that among the more important of native red wines are Burgundy, claret, and hermitage; of sweet wines, Muscat, port, and sherry; of white wines, hock, Madeira-dry, Shiraz, and Tokay. Australian vintages, it may here be observed, are gradually finding favor in European markets, with exports to England alone of 200,000 or 300,000 gallons a year. Already the tentative stage has been passed, and many varieties will bear comparison with the lighter wines of French production, while for domestic use they have almost superseded imported brands.

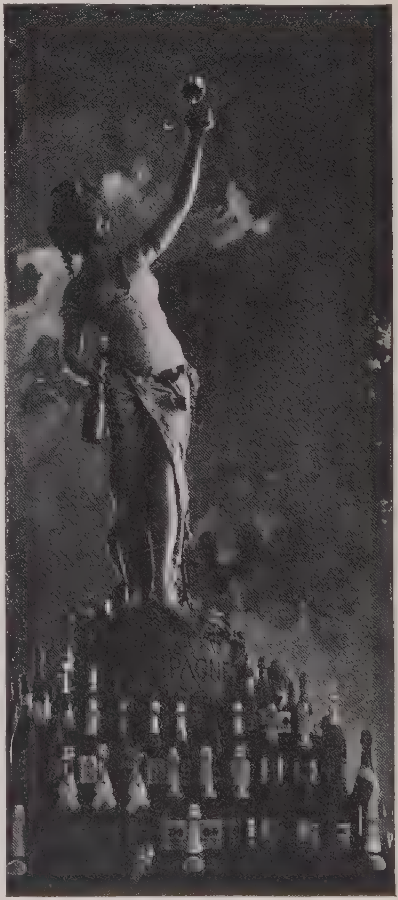
Across the aisle from the exhibit of New South Wales are the light wines of Austria-Hungary; and here also Russia displays the products of her Caspian and Caucasian vineyards. In a far corner of the hall are the wines of New Mexico, North Carolina, and Japan, in small but tasteful groups. On the pavilion of North Carolina is an inscription which claims that her territory is the home of the grape; thus recalling the stories told by the discoverers of the Atlantic coast as to the profusion of wild grapes along Carolina shores. The Japanese booth has corner posts of bamboo poles, and above it is the national flag, whose device is a red ball upon a white background. The names upon the bottles are strange, and we wonder, for instance, what such a wine as selijyunbudosyu can be, hoping that the beverage is more palatable than its name suggests.


INTERIOR OF THE GERMAN WINE CELLAR

In the gallery of the viticultural section are the government exhibits of Italy, Greece, and Portugal, with miscellaneous assortments from France and Spain. The latter include the cordials of a Spanish manufacturer, of which, it is said, the Infanta loves to partake. On the opposite side of the gallery is the Portuguese collection, contained in a pavilion of which one of the arches spans the stairway leading to the upper floor. Vines are trellised over the wood-work, and the national flag and royal coat of arms are grouped over the principal arch. Within are said to be the genuine wines of the Oporto district. Italy occupies the western end of the viticultural gallery, her exhibit consisting mainly of ornamental structures, composed of casks and bottles, the centre-piece resembling a large flowering bush. Near the base of the structures are many large diplomas presented to Italian wine-makers at former expositions. Of the wines themselves the choicest are those from vineyards planted on the seaward slopes of Mount Vesuvius. The wines and brandies of Greece are displayed in a white pavilion, the roof of which is supported by Corinthian pillars, and at the further end of this gallery are exhibits of California raisins, one in the form of a pyramid of glass cases from Escondido, and others neatly arranged by Fresno dealers and packers.


PART OF GERMAN WINE EXHIBIT

The pomological exhibits are mainly grouped along the curtains of Horticultural hall, and largely consist of the green products of the United States, and other lands. Shipping their fruits in compartments cooled by refrigeration, such distant regions as the Cape and Australian colonies forwarded their more hardy species in fresh condition, while grapes and orchard fruits of the season of 1892 were preserved in cold storage for exhibition, not only in our own but in foreign countries. Thus France has sent us several hundred varieties of deciduous fruits, her display of pears being the largest, and one of the best on exposition. Russia has forwarded a collection gathered from every region of the empire, even from the frozen plains of Siberia, while from the tropics came varieties that could not elsewhere be seen. From northern Africa came a consignment, and New South Wales installed

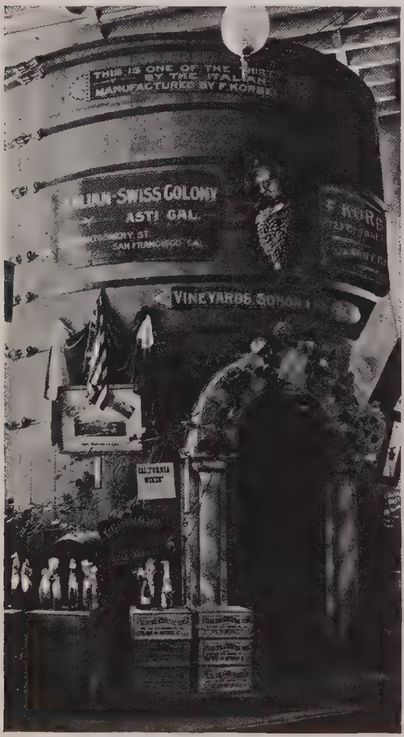

IN THE FRENCH SECTION

the first shipment of fresh fruit sent from Australia to the United States.

WINE EXHIBIT, CALIFORNIA

About the middle of March several barrels of apples, a bushel of pears, and a crate of grapes were placed on board a sailing vessel bound from Melbourne to San Francisco, and then forwarded by rail to Chicago, where they were installed in good condition. Other shipments of fruit were made from Australia under more favorable conditions; and by Atlantic steamers, with their cold-storage compartments, oranges, lemons, figs, and other fruits were brought from Naples and elsewhere in southern Europe. Thus the pomological department at Jackson park represents the conditions and products of the principal fruit-growing regions of the world. Several countries which could not furnish a complete exhibit substituted wax and plaster models, Germany excelling all others in this respect, with imitations so perfect that it is almost impossible to detect them. In drawings and paintings are also placed before the visitor the native fruits of several lands.

A liberal but divided space in the northwestern section of the hall is devoted to the citrus display of California, one that is in all respects worthy of the golden state, collected and grouped with the utmost care, and renewed as occasion requires, the waste of fruit from decay and damage amounting, in this and other exhibits, to hundreds of pounds a day. On tables, in piles, in pyramids, and in more complex forms, one of them reproducing the orthodox liberty bell, are oranges and lemons of all varieties, gathered from many portions of the state, from San Diego county, adjoining the Mexican border, almost to the boundary line of Oregon. Among the scores of specimens are the best that Riverside and other citrus belts could send, including Washington and other navels, Mediterranean sweets, St Michaels, and Malta bloods; while of lemons there are the Sicilian, Lisbon, Bonnie Brae, and Eureka.



REDWOOD TANK

At the opposite end of the section the citrus belt of southern California is represented by a tower of oranges, thirty feet high, its base of navels and other of the larger species, above which are the smaller varieties, its top surmounted by an eagle, and encircled with rows of lemons fashioned in the shape of a cornice. In the open court beyond are orange and lemon groves in miniature, with other exhibits illustrating California methods and products by practical results. Add to this the peaches, nectarines, and apricots; the cherries, and plums; the apples, pears, quinces, grapes, figs, olives, and berries which California had to show during the season of their fruitage, and no wonder that the display from the golden state was to the majority of exposition sight-seers almost in the nature of a revelation.

CALIFORNIA'S TREE PAVILION

Fruit-growing, as I have said, is every year assuming larger proportions in southern and central California, where, from the foothills of the sierra to the shores of the ocean, there are large areas adapted to this industry. Many thousands of acres, before devoted

WINES OF ITALY

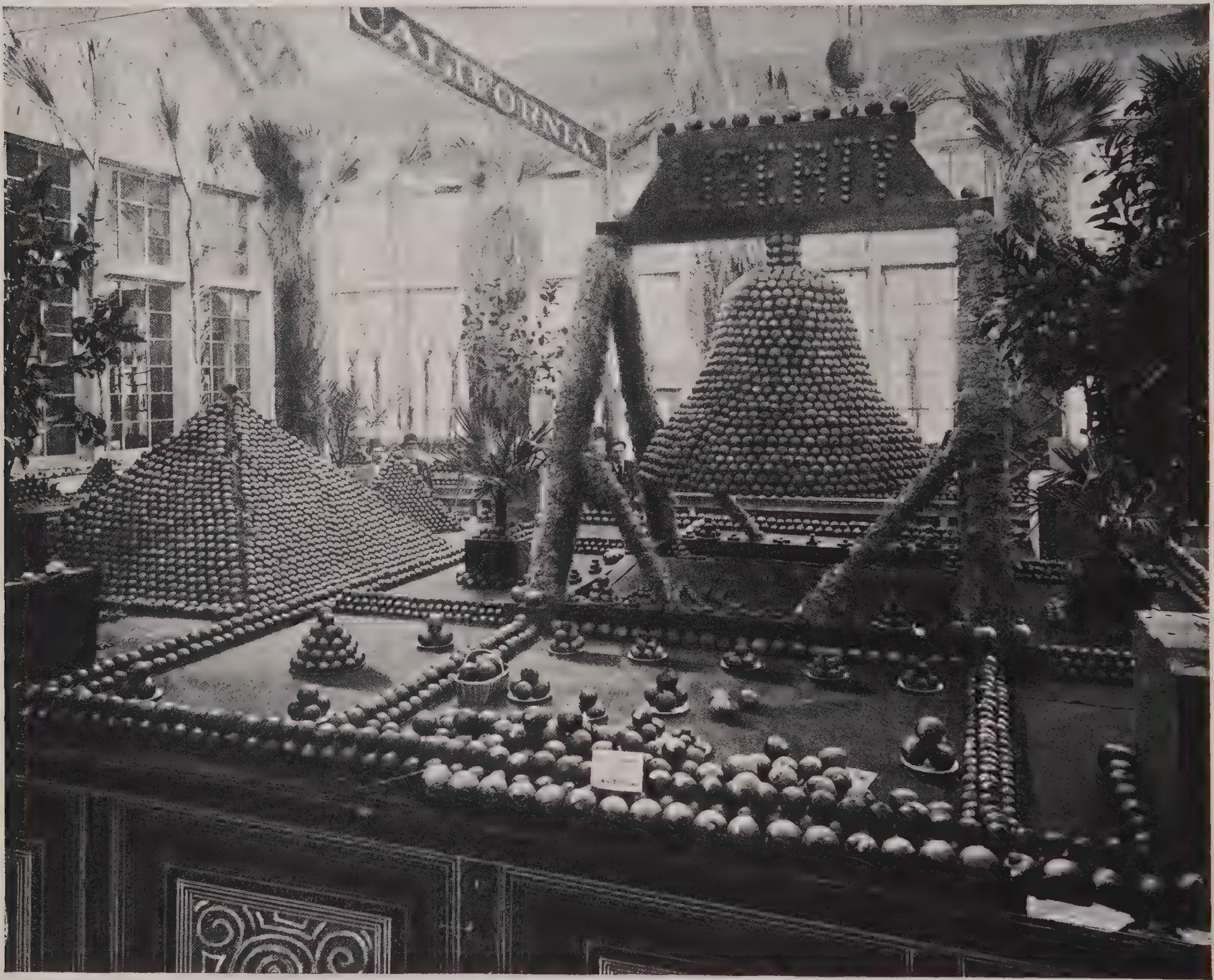
WINES OF PORTUGAL

to cereals, are being planted as orchards and vineyards, while in quality, as in quantity, the yield is steadily improving, for inferior fruits are almost unsalable, either in local or other markets. It was not until 1869 that eastward shipments by rail became possible; but since that year, notwithstanding almost prohibitive rates of transportation, the volume of production has increased from thirty to fifty-fold, and with the promise of still more remarkable development, awaiting only the advent of competing railroads. In 1870 less than 1,000 tons of fruit, in whatever form, were forwarded to eastern points; in 1880 the total did not exceed 3,000 tons; for 1890 shipments of fresh fruit amounted to 52,500 tons, and of dried fruit, 33,000 tons. For the three years ending with 1889 the trade with New York alone increased in more than ten-fold ratio; in Chicago almost as much, and in either city California fruits were hawked around their streets, and were for sale at moderate prices in hundreds of stores and booths. Said the New York *Sun:* "The products of Pacific slope orchards and vineyards are now competing with our own fruit products, and beating them out of their boots, so to speak, in spite of the 3,000 miles of disadvantage under which Californians labor in comparison with local growers."

Between the two divisions of the Californian exhibits are scores of long tables covered with groups of apples, including the russet, Ben Davis, Northern Spy, and their kindred, from all the states. New York and Michigan occupy the central spaces, flanked by Wisconsin and New Jersey. "York state" apples have ever been favorites, even with western people, and assuredly her 110 varieties displayed in Horticultural hall will not dispel the charm, especially her Newton pippins and Hudson river apples. Of excellent quality also are her grapes, pears, strawberries, and other fruits, smaller than western descriptions, but, as is claimed, superior as to flavor, texture, and durability, the rich western soil favoring rapid growth and bulk at the expense of finer qualities. Minnesota and Illinois are grouped beyond New York, the latter occupying a tasteful pavilion, divided into sections, in which are displayed her berries arranged according to locality. Iowa also maintains her reputation as a fruit-growing region. Tokay and other grapes, and the large orange cling peaches of the western states are also on exposition, some of the latter almost as large as summer squashes, preserved in liquids, and displayed in glass jars.

LOOKING INTO THE VITICULTURAL HALL

The strongest feature in Missouri's exhibit was her choice collections of peaches, berries, and apples, the famous olden fruit farm of Howell county, and other orchards of the Ozark mountain country sending frequent consignments of peaches in season, while, earlier during the term of the Fair, southern Missouri sent strawberries of wonderful size and flavor. In her exhibition of fresh fruits, replenished and varied throughout the season, Missouri was a competitor with such states as Delaware, New York, New Jersey, Pennsylvania, Ohio, Michigan, Illinois, Wisconsin, Minnesota, and Iowa. There were also 1,000 glass jars of all sizes and shapes, filled with nearly all the fruits, berries, and vegetables of the temperate zone, preserved in antiseptic fluids, so that for several years some of them have almost retained their natural appearance. Arkansas shows many specimens of apples, pears, peaches, plums, and small fruits, all of excellent quality, and especially her apples, whose flavor and staying qualities are strongly commended.



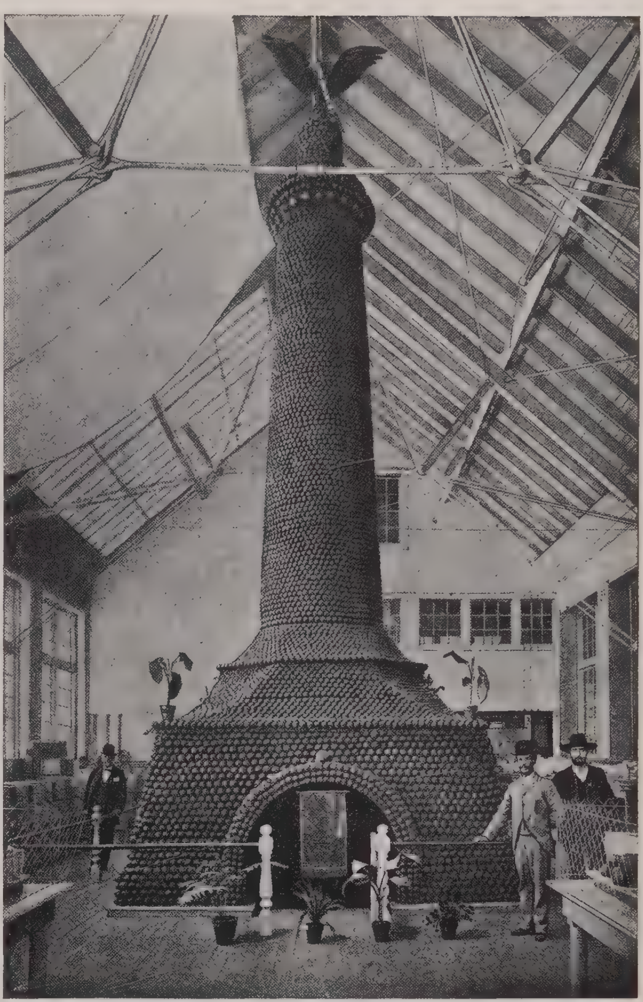
LIBERTY BELL IN CALIFORNIA SECTION

A theme of almost universal comment are the exhibits of the far western states, apart from that of California. From Colorado come berries as bright and fresh as her own mountain air, with fruits preserved in alcohol, and wax models, taken in fac-simile during the autumn of 1892, of more than 600 specimens of apples, peaches, pears, quinces, and melons. Idaho sends her preserved grapes, prunes, egg-plant, radishes, and other fruits and vegetables, some of which were raised at an elevation of six thousand feet above sea level. Oregon, Washington, and Montana have thousands of green and preserved specimens of apples, apricots, cherries, peaches, pears, plums, prunes, grapes, and berries. The Oregon and Washington booths were somewhat of a surprise; for even among the more intelligent class of visitors, many were not aware that either state could send anything more than samples of their farm products, fish, and lumber. Certain it is that few expected to see here such clusters of Black Hamburg grapes as Oregon sent, some of the bunches weighing nearly a dozen pounds. Her orchard fruits are also of choicest quality, and especially her apples, which, for thirty years or more, have been largely raised for export.

Adjacent to the Oregon pavilion is the Florida section, where he who is so disposed may compare the fruits of the furthest south with those of the far northwest. At the entrance is an archway of russet oranges, and near by a tall cocoa-nut tree raises its head almost to the ceiling, around its trunk an assortment of nuts, with portions of the shell removed. The walls are lined with gigantic palm fronds, beneath which are rows of cocoa-nuts and pine-apple plants, the latter in all stages of growth and bearing. By Florida were sent the first peaches to the Exposition, with a small collection of early tomatoes, cucumbers, and other fruits and vegetables out of season in the north and west, all the result of private enterprise, for there was no state appropriation for any purpose.

The artificial fruits of Germany are wonderful specimens of artistic manipulation. Crisp lettuces, large apples, somewhat speckled, juicy pears, plums, and berries, parsnips and turnips—cut through here and there to show the interior structure—and other fruits and vegetables are spread before the visitor in such perfect imitation that the closest inspection almost fails to detect them.

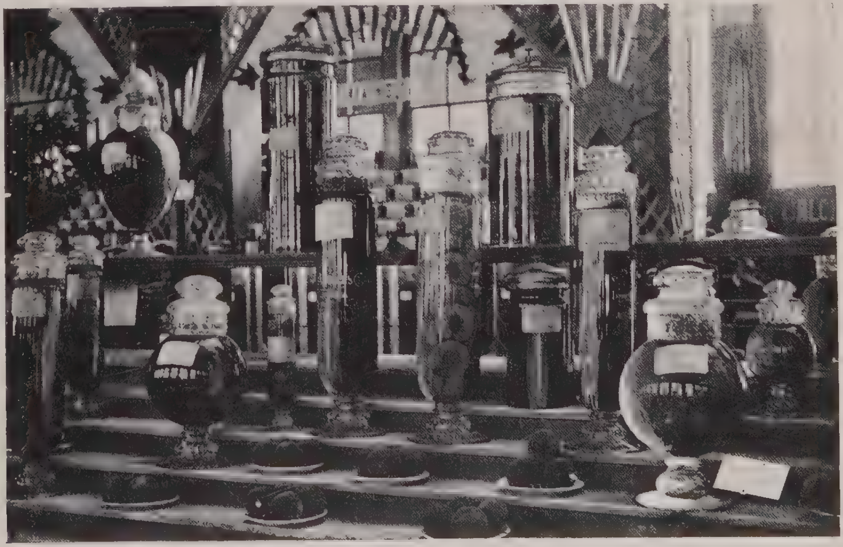
Near the California orange tower is a collection of Italian fruits, mainly shipped from Palermo, and opposite is a small display of apples and pears from New South Wales. When their history is known, certain red and yellow apples from the Australian colony attract much attention; for the latter have travelled hither via the Pacific ocean and San Francisco, and the former by way of the Suez canal, the Mediterranean, London, and New York. Both were shipped from the same orchard near Sydney, and those which crossed the Pacific arrived at the Fair two weeks earlier than the consignment forwarded by the Isthmus route.



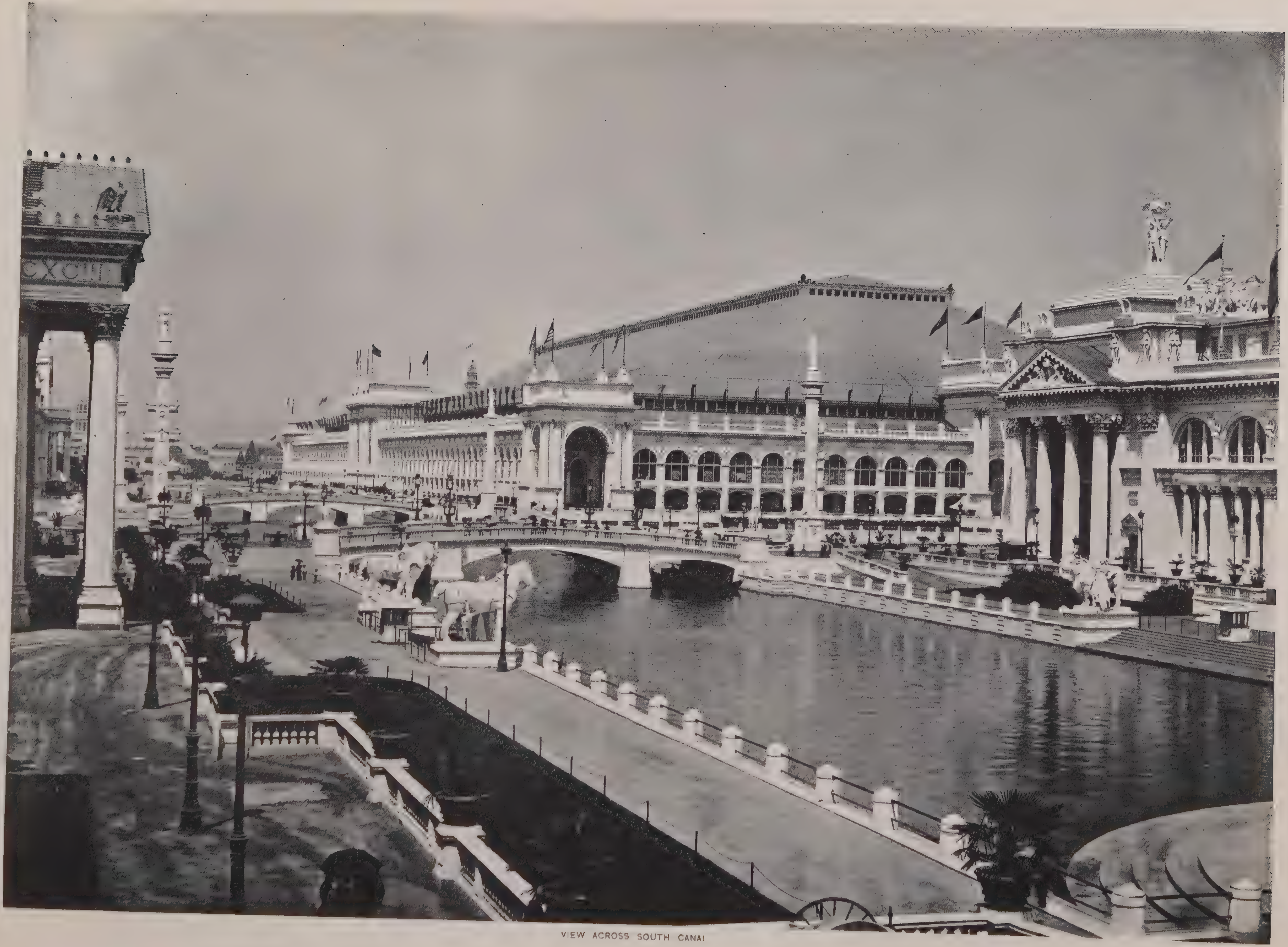
CALIFORNIA CITRUS TOWER

North of the main western portal is the Canadian exhibit, her specimens of berries and other fruits, fresh and preserved, arranged in four pavilions, and on triple rows of tables, the province of Ontario making the largest display. While preserved fruits form the bulk of the collection, the apples, peaches, and berries grown in the garden region enclosed by the great lakes are as fresh as though shipped from Michigan or Wisconsin. Quebec has also a moderate exhibit, and Nova Scotia and Prince Edward's Island prove their capability for producing the finest of fruits. Among the apples from British Columbia are some choice specimens from the orchards of Lord Aberdeen, now governor-general of Canada.

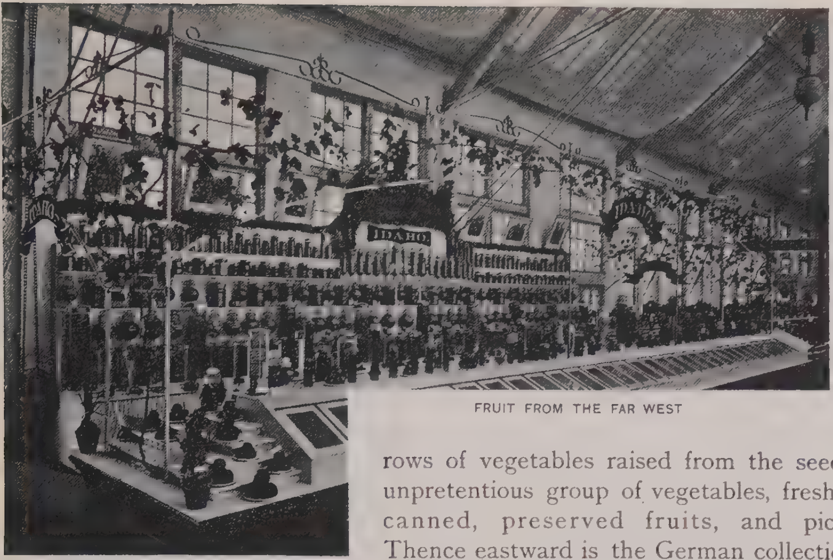
SECTION OF CALIFORNIA EXHIBIT



PRESERVED CALIFORNIA FRUIT



VIEW ACROSS SOUTH CANAL



FRUIT FROM THE FAR WEST

Seeds, vegetables, horticultural implements, dried and canned fruits, nuts, and other articles from the United States and foreign lands are mainly grouped in the northern section of Horticultural hall. In a corner adjoining the display of fresh fruits the New Jersey firm, mentioned as contributing one of the most extensive and attractive exhibits in the floricultural department, erected a miniature fortress of seeds, contained in glass cases, and in thousands of paper envelopes. The summit of the glacis is covered with plume-like grasses, and beyond are rows of vegetables raised from the seed. Canada's space near by presents an unpretentious group of vegetables, fresh and canned, preserved fruits, and pickles. Thence eastward is the German collection of seeds, models of vegetables, garden ornaments, lawn mowers, and all kinds of garden apparatus. Three of the largest Erfurt and Quedlinburgh houses are represented in the hall, and another firm calling itself Purveyor to the Royal Prussian and Ducal Coburgh-Gotha courts makes an extensive exhibit. One of the Erfurt establishments has on the screens of its pavilion a series of paintings symbolic of horticultural pursuits, with tasteful scrolls and cornucopias, gods and goddesses, plump of aspect, and flowers, fruits, and vegetables in every stage of growth.

FRUITS IN SEASON

The New York firm of Henderson and company has a large assortment of seeds, and, in the form of a mound, reproduces in papier maché all kinds of market garden products. On the summit of the mound is a model of its establishment, with workmen at the windows, elevators running to and from the several floors, and customers passing in long procession through the entrance way. Henry A. Dreer of Philadelphia, and J. C. Vaughan of Chicago and New York, have also attractive exhibits of seeds, and there are smaller collections from Ohio, New Jersey, and Utah exhibitors.

Many American, French, and German establishments show, either in the form of illustrations and pamphlets, or as actual exhibits, the latest garden appliances, both for useful and ornamental purposes. There are lawn mowers of regular size and in miniature, motionless, and engaged in cutting imaginary grass from imaginary lawns. Rustic vases, stands, seats, monuments, seals, alligators, and other hideous beasts supposed to add to the attraction of garden landscapes, are also profusely displayed. From Indiana a Bedford firm sends a number of ornamental pieces composed entirely of stone, its works being in the very midst of limestone quarries. Some of the figures are works of art, as those by Leonard Volk, the Chicago sculptor, and the typical gypsy, both of which are on the roof of the pavilion. Adjoining this another Indiana firm has samples of wire net-work for fences and gates. Its pavilion is of wire, the square open-work pillars trellised with vines, and within the enclosure are piles of manufactured articles.

The French exhibit in this connection, occupying a narrow strip along the northern wall, consists largely of literature devoted to the subject, with the advertisements of houses which furnish fancy baskets, seeds, twine, and all kinds of apparatus for heating conservatories, and hot-houses. A Troyes firm has a collection of knives, shears, and pruning hooks, some of them in fantastic shapes, and suggestive rather of surgical instruments than the purposes for which they were fashioned.

ILLINOIS PAVILION

A liberal space in this vicinity is occupied by California products, displayed in the form of pavilions fashioned entirely of canned fruits, towers of almonds and walnuts, and tier upon tier of boxes filled with

A TYPICAL SEED EXHIBIT

prunes and raisins, the last representing an industry whose growth may be inferred from the increase of pack, from 6,000 boxes in 1873 to more than 1,000,000 boxes in 1893. Of excellent quality are the prunes, and other dried fruits of Idaho, and the preserved fruits, jellies, and pickles of Kansas, and Colorado. Even the New Mexican Pueblos, the oldest of our native races, were imbued with the spirit of the day, erecting a little booth across which are printed words of greeting, and placing therein bottles and jars of preserved fruits.

New Mexico has also sent us as a work of art, a reproduction of the Horticultural building itself, in the shape of a model in silver filigree, more than 100 pounds of metal being used in its construction. In this connection may be mentioned another exhibition of fine metal and filigree work, a case filled with wreaths and flowers, closely resembling imitations in wax, displaying the skill of a German artisan. The Greek pavilion lies opposite the one which contains the products of Ohio cider presses. Its contents consist mainly of the figs of Attica, the Corinthian grape or currant, and other dried fruits from mainland and Peleponnese.

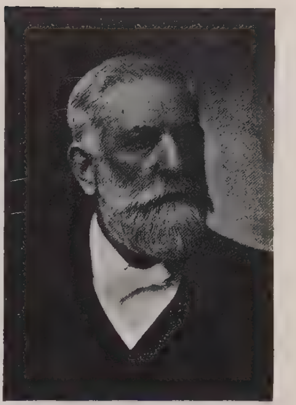
Among the gallery exhibits may first of all be mentioned a tower constructed of cases of English walnuts, forming a portion of the California collections: but here also are booths filled with the canned and dried fruits of many climes. A considerable space is occupied by the San Francisco firm of Lusk and company, in whose pavilion, tastefully decorated with silken banners, are displayed all the canned fruits of the golden state. In a corner of the gallery is shown a very simple device, which is interesting many fruit growers, and has been adopted by not a few. It consists of a long rod, with shears, and a canvas tube attached, so that by merely pulling a cord the stem of an apple or orange is cut, and the fruit falls into the receptacle placed beneath.

NEW YORK DISPLAY

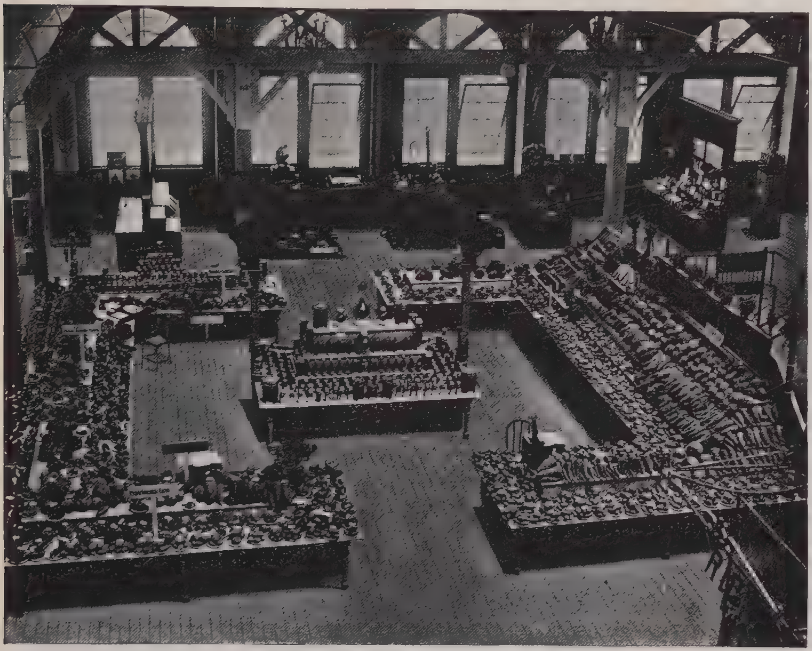
THE OREGON SECTION

Pecans, neatly packed in cases, with photographs of Pecan bayou, as well as of the Swinden pecan orchards at Brownwood, call attention to a prominent Texan industry. Among other illustrations, scattered throughout the gallery is one of a special train of canned fruit shipped from San José, California, and elsewhere are views of the public gardens of Bremen, and the villas of Nice. Except for its well appointed restaurants, these almost complete the contents of the gallery, or such, at least, as here need special mention.

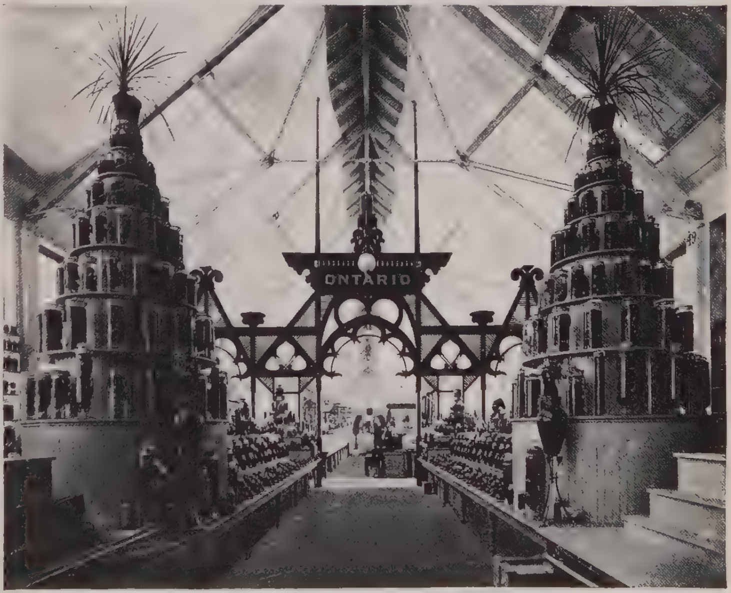
Thus, as briefly as the nature of my subject would permit, I have described the more salient and many of the minor features in the department of Horticulture, an attractive display to all classes of visitors, and to many the most attractive in all the wide grounds of Jackson park. For the skilful grouping and management of all these varied and varying collections, credit is due, among others, to the chief of the department, John M. Samuels, and to John Thorpe, Charles Wright, and H. M. La Rue, superintendents, in the order named, of the bureaus of floriculture, pomology, and viticulture.


H. M. LA RUE

In conclusion a brief description may be added as to the out-door exhibits in connection with this department, its conservatories, hot-houses, and grounds, with some further mention of the thousands of horticultural and other specimens, contributed in lavish profusion from every quarter of the world. During the autumn of 1892, palms, ferns, nursery trees, and decorative and aquatic plants arrived by the car-load from the United States, from Spanish-American countries, from Europe, Australia, and Japan, until winter put a stop to further shipments. Almost before the snows had melted, the greenhouses near the Horticultural building presented signs of life, and by the middle of April at least 200,000 plants had been received at the conservatories.


CANADIAN VEGETABLES

In early winter thousands of Chinese primroses, hanging in dainty groups of variegated pink, white, blue, and red, represented the floral contributions of England, Germany, America, France, and Italy. Then came the Persian violets, richer even than the Chinese blossoms, issuing in regal splendor from the enfolding bulb. During the lenten season, the cineraria came forth in innumerable clusters, ranging in color from the purest white to the deepest purple. Crimson, yellow, bronze, and lavender calceolaria also revealed their beauties under the feeble rays of the sun, side by side with the English primrose, and the German hyacinth. Japanese ferns, trained in grotesque imitations of beast and fish, European pansies, and geraniums of many varieties helped to complete the opening chapter in the horticultural annals of the Exposition.



CANADIAN FRUITS

During the later spring, large beds of pansies skirted the Horticultural hall, and blossoms by hundreds of thousands were massed between it and the banks of the lagoon. Here were contributions not only from New York, Pennsylvania, New Jersey, and other states, but from Germany, Great Britain, France, Italy, and Belgium. Begonias, cannas, zinnias, and phlox flashed their bright hues around the building, these and other floral displays giving color to the home of the Fair.

CHARLES WRIGHT

In truth there was barely a week, between the months of May and October, that failed to reveal a fresh series of flowers and blossoms, rhododendrons, hyacinths, primroses, tulips, and pansies in May; roses and lilies in June; sweet peas, peonies, tea roses, clematis, and begonias in July; hollyhocks, carnations, dahlias, asters, verbenas, hydrangeas in August and September; and chrysanthemums, orchids, and various flowering annuals later in the season. The grounds adjacent to the hall, the banks of the lagoon, and the Wooded island opposite, were mainly selected for the out-door display of flowers, which was not only the herald of the Fair but continued throughout its term. The competitive exhibit of cannas, in which New York and Pennsylvania were rivals, was the finest ever witnessed in the United States, including more than 5,000 plants, though Pennsylvania restricted her collection entirely to French varieties.

The neighboring grounds, surrounding the Woman's building, were lavishly but tastefully decorated by France, and here was well represented the floricultural art of this nation of artists, fostered, as it is, by the Jardin des Plants and the gardens of the Tuilleries, the Luxembourg, and the Museum.

But it was upon the Wooded island that the richest of the floral exhibits were concentrated. Here is a resting place, with winding walks, shady nooks, and picturesque summer houses covered with vines, with shrubbery and flower-beds at every turn, and with willows drooping gracefully toward the waters, above which sea-gulls, and other aquatic birds are flitting to and fro. Three bridges of the Venetian order connect with the terraces fronting the Horticultural building, and with the southern shore of the lagoon. One of them, of Japanese design, leads from the mainland to a quaint structure at the northern extremity of the island. Here many visitors linger before this so-called temple of Hōōdo, or wander through a garden laid out with rare ingenuity. Here was the weird looking, long-petalled chrysanthemum, the national flower of Japan, and here bloomed the fragrant rose which the Japanese call wichuriana, before a stranger to this country. In this locality, more than in any other, the visitor was introduced to new and unusual forms of floral life.

The Wooded island was the special home of the rose; at its southern extremity was a gorgeous bed of

JAPANESE EXHIBIT

JOHN THORPE AND HIS FLOWERS

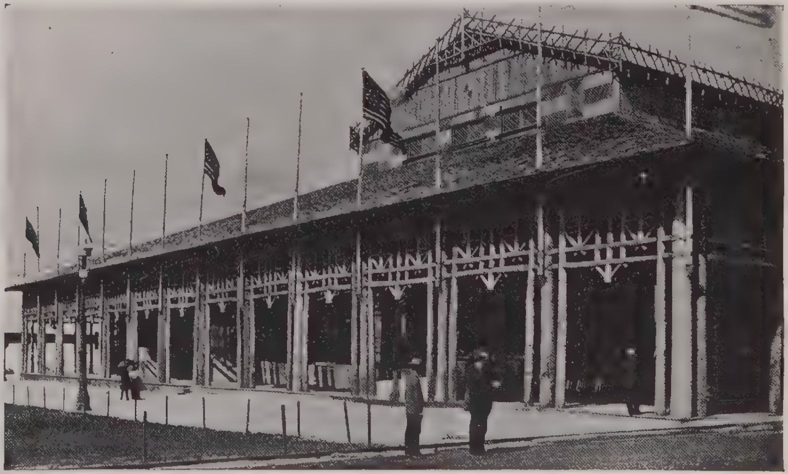
INTERIOR OF CONSERVATORY

FORESTRY BUILDING

these flowers more than an acre in extent, and near by blossomed fields of rhododendrons and lilies from Belgium, Holland, Great Britain, and the United States. The rhododendrons contributed by the Horticultural society of Ghent were remarkably beautiful, fully maintaining the reputation of that city as a floricultural centre. The roses came from almost every country in the world, forming the most complete collection ever gathered together, while honeysuckles and other vines were trained over the surrounding fences, appearing like solid masses of blossoms and foliage. Germany covered half an acre with her cheerful garden flowers. The holly trees and yews of England were not far away; and Pennsylvania and New York, California, France, and Austria, planted specimens from their fields and forests on this cosmopolitan island. But there was also a distinctly American exhibit, in the form of a magnificent bed of sunflowers on the highest point of the island, their hardy faces hanging in clusters of thousands, and dispensing afar their homely fragrance.

He who is so disposed may wander over the bridge connecting, toward the south, with a smaller island, and there for a moment linger over the picturesque reproduction of an American hunter's camp, and the diminutive bark cabin of an Australian pioneer. The former is the headquarters of the Boone and Crockett club, an organization of prominent sportsmen throughout the United States, whose object is to preserve the large game of the country, especially that of the Yellowstone or National park. The structure is built of rough logs, and within, over the rude fire-

COLONNADE OF FORESTRY BUILDING



THE SOUTH FRONT

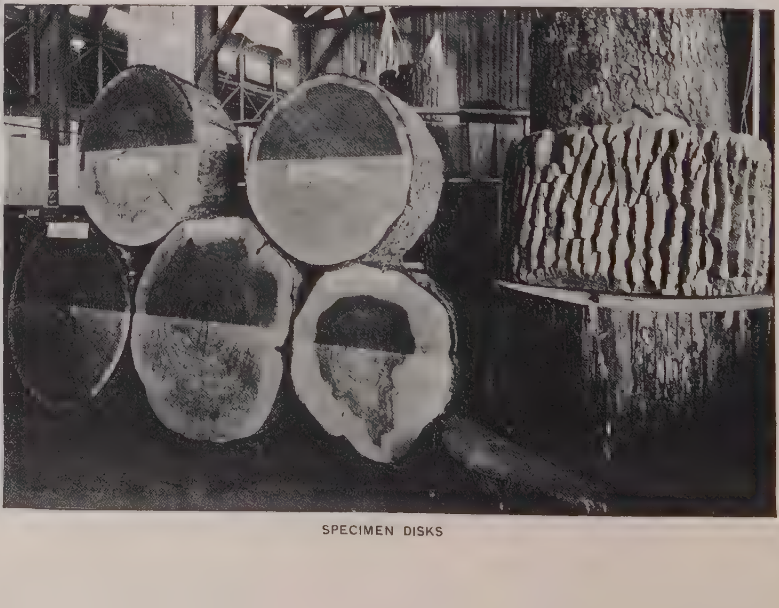
place, is the skull of a grizzly bear. On the floor are deer skins, and over the doorway are the broad, spreading antlers of an elk. Woolen blankets, skins, saddles, and lassos are strewn carelessly over rude tables, bunks, and chairs; field glasses and weapons lean against the rough walls, or are fastened to them; a pile of fuel is neatly stacked in a corner of the room; in short, there is nothing omitted from the furniture and equipments of a hunter's cabin. The camp is under charge of Elwood Hofer, who, for the occasion, was relieved from his task of capturing animals in the Yellowstone, or National park, for the Smithsonian institution.

INTERIOR VIEW

Though officially classed with Agriculture, the Forestry exhibits will here be described in connection with Horticulture, to which department they would appear to be more akin. Though foreign lands are also represented, the specimens are gathered mainly from the United States, whose forests, as it would seem, are not destined to remain much longer on the face of earth, for apart from other uses, some 40,000,000,000 cubic feet are annually converted into lumber, representing an industry which keeps busy about 100,000 establishments and several hundred thousand men, with a value estimated at $800,000,000 a year.

Of all the Exposition structures the Forestry building is, more than any other, symbolical of the purposes for which it was designed, forming, as it does, an integral portion, and perhaps the most interesting portion of the exhibits which it contains. A plain, unpretentious edifice, 500 by 200 feet, and with its main façade fronting on the lake, in style of architecture it is of the rustic order, its roof thatched with bark, its sides of wooden slabs from which the bark has been removed, and its entrances fashioned in various kinds of wood.

MICHIGAN BURLS


SPECIMEN DISKS

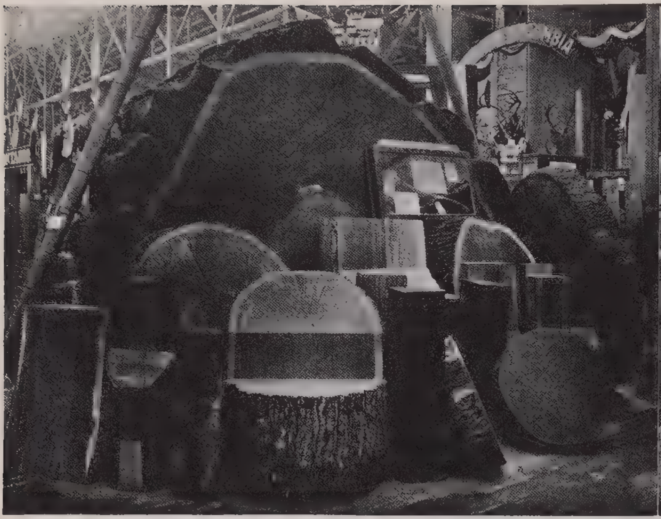
LOG FIREPLACE, MICHIGAN EXHIBIT

But the most unique and attractive feature in this temple of Forestry is the colonnade which supports the roof of the spacious veranda, formed of the trunks of trees twenty-five feet in height, but otherwise of different proportions, arranged in groups of three, and with the largest of each triplet in the centre. About thirty states are here represented, and the flags and coats of arms of participating nations and commonwealths appear above the cornices of the veranda. A passing examination of these columnar trunks shows that the larger specimens are of red cedar, Douglas fir, bull and white pine, western hemlock, the black spruce, the bald cypress, the tulip poplar, the white oak, and the green ash. The principal minor specimens are the Ohio buckeye, the Sitka spruce, the western larch, the red alder, the arbor vitæ, red oaks, aspens, and yellow and white birches. Here are represented the forests of Canada, of the east, the south, the Pacific slope with its far northwest, including all the wooded regions from the Arctic ocean to the gulf of Mexico.

Among the most beautiful of the columns which flank the great trees are the silver maples which once grew on the banks of western rivers, or on the Atlantic coast from Maine to Georgia, and the red maples of the swamps, which still are found at intervals from Canada to the gulf. More delicate still are the birches, with bark of pure white or silver yellow. The strips which hang from the trunks seem as if covered with rime, for the birch is essentially a tree of the north. Carrying out the idea of displaying the primary forms of forest wealth in the structure of the building, its sides are composed of slabs, the frames of doors and windows being sections of logs with the bark removed. From the roofs of the verandas depend borders, or cornices, fashioned from limbs and saplings into simple geometric figures. Bark covers the roofs of both verandas and main structure, a rustic fence surrounding the latter. In the erection of the building wooden pins were substituted for nails and iron bolts, for the design of the architect, Charles B. Atwood, was to illustrate the substantial and economical work which can be done by American builders with wood alone. In carrying out this idea, and in making the building itself the primary exhibit of the department, about $100,000 was expended, and more than 2,500,000 feet of timber were consumed.

WOODEN MANUFACTURES

SAMPLES FROM MISSOURI



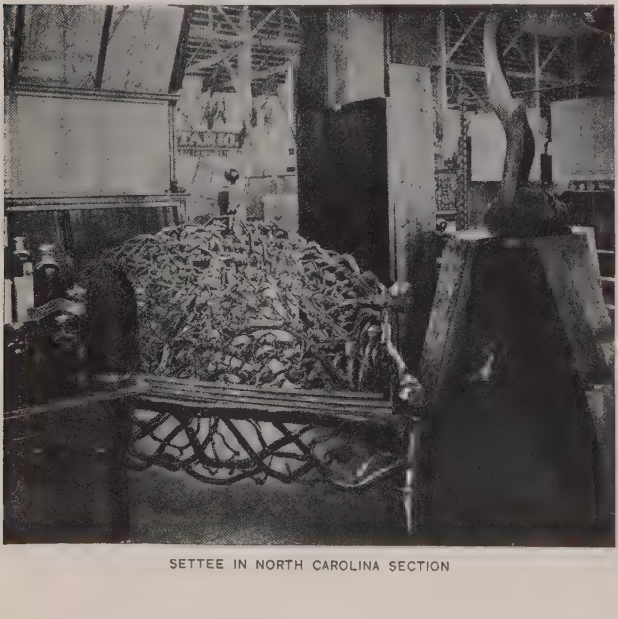
SECTION OF CALIFORNIA TREE

VIEW OF CALIFORNIA EXHIBIT

A superficial examination of the Forestry building fails to disclose any main portal, for all the doors are square, and of similar pattern. Once within, however, the visitor soon discovers a spacious vestibule fronting the east, which may be considered as the principal entrance. Here is an illustration of the decorative qualities of yellow pine and cypress from the Southern Lumber Manufacturers' association, the sections of wood forming the square pillars and panels of the dado, the round columns above, the rich border of cypress, and the ceilings themselves, being highly polished, and dressed so as to show all the details of graining.

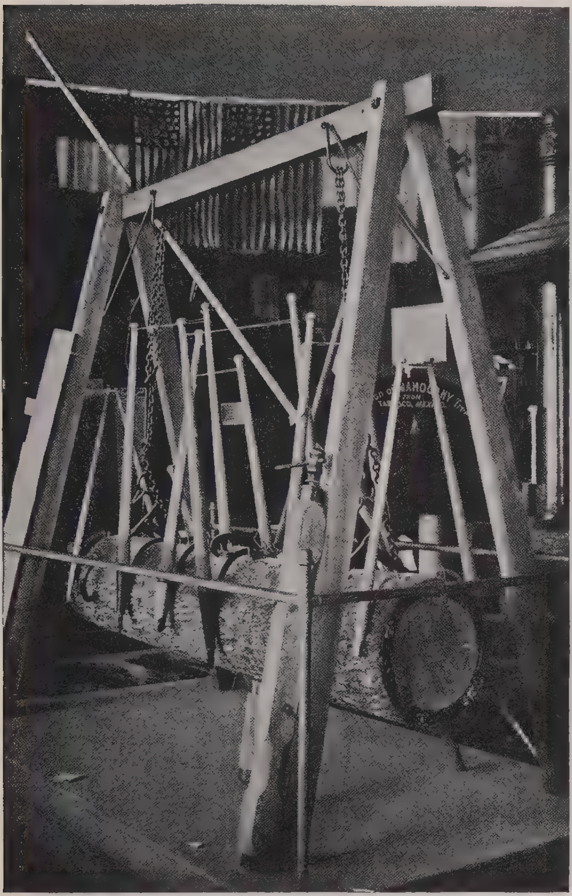
Passing thence, the visitor finds most of the massive exhibits fronting the vestibule, or grouped in its neighborhood. Around him are the products of the forests of Michigan, Wisconsin, Washington, West Virginia, North Carolina, and Missouri, and before him gigantic sections of pine and hemlock from Canada, and slabs of polished woods from the wilds of Australia, while in the very centre of the hall is a massive monument containing specimens from all the exhibiting states and countries. Scores of huge blocks and polished sections of wood are arranged around the mammoth redwood from California, which has carried away the honors of the entire display, an arrow and the head of a brass tack upon its face indicating the diameter of the tree at the time of the event which the Exposition celebrates. Another object which attracts almost as much attention is one of the axes which England's premier uses so vigorously upon the trees of his Hawaarden estate.

To the northeast of the vestibule are the evidences of Michigan's forest wealth. A rustic gateway gives entrance to the exhibit, the cabinet which incloses it being highly polished, and neatly panelled bird's eye maple, oak, elm, walnut, and other varieties entering into its construction. An odd conceit, and one deftly executed, is that of placing

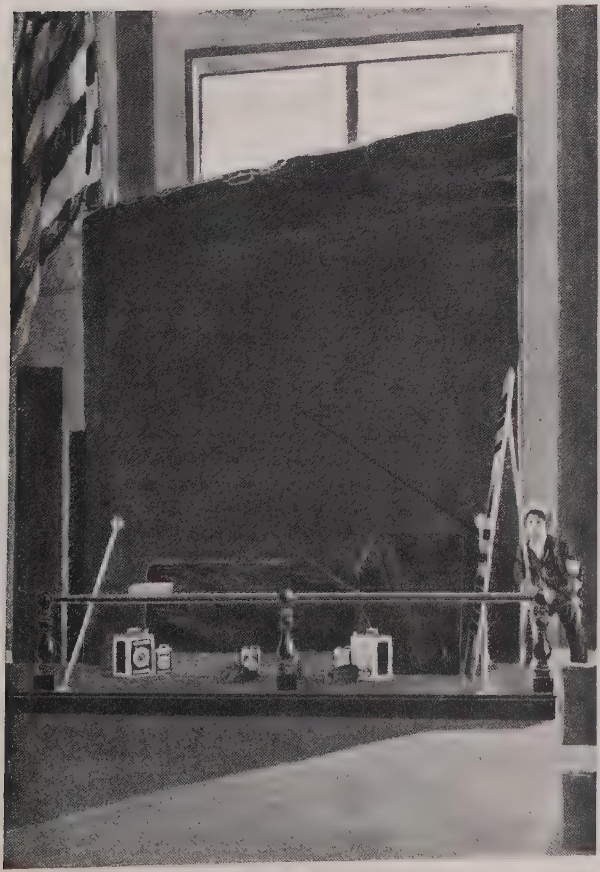


SETTEE IN NORTH CAROLINA SECTION

IDAHO'S PINE



LUMBERING TOOLS



RED WOOD PLANK FROM CALIFORNIA

in the cornices several transverse sections of small logs, with the bark only removed, hatchets, saws, and compasses carved out of wood appearing at various points, and completing the decorative scheme. Over the main entrance is the symbol of the state, two stags engaged in combat with an eagle between them, and specimens of pine, cedar, and poplar are contributed by her experiment station. The furniture factories of Grand Rapids and other cities of southern Michigan find in the specimens of walnut, oak, maple, and pine here displayed, one of the secrets of their success. In a small photograph gallery within the pavilion are shown the enemies of Michigan woods, one view depicting the ravages of the web-worm upon the poplars of a city avenue, every leaf being stripped from the branches, while upon the opposite side of the street is a row of flourishing maples exempt from the plague. In a corner of this section is a rough fireplace made of logs, and in the centre a miniature fortress of gnarled trees. Various forms of manufacture are also represented, as sulphite fibre, basket-work, and wooden-ware.

Wisconsin has erected a neat pavilion built of her native woods, with six varieties in each of the twenty hexagonal columns which support the birch bark roof. The floor is of cherry and birch planks, and between the pillars are two-score blocks of timber which have a commercial value. In the centre of the structure are logs of pine, oak, and other varieties, with smaller sections arranged on stands. In branches and seeds are also represented the pine, spruce, birch, and hemlock forests of northern Wisconsin, as well as the cultivated elms and other ornamental trees of the southern portion of the state. Upon the walls and scattered throughout the specimens are many colored pictures and photographs depicting scenes in logging camps, saw and lumber mills, showing some of the largest loads of logs which have ever been hauled from western forests, one of them twenty-one feet high and twenty in width.

A score of people might stand on one of the mammoth disks of cedar which Washington has laid upon the floor; and this is by no means the best that the forests of the evergreen state can do, though here as in her own building is an imposing display. Missouri woods include many varieties, with rough sections of trees and others dressed and polished, among which may be noticed the delicate graining and tinting of the holly, aspen, yellow cypress, and silver maple. This exhibit is inclosed by a wall of tree trunks cut in regulation lengths, including about 150 massive specimens.

In an adjoining section, the forests of West Virginia are displayed in a collection of photographs. Forests of pine, spruce, chestnut, beech, oak, cherry, and black gum, and logging scenes in the mountains, and along the rivers, are all represented by the artist, and there is a circular tower of woods with gigantic poplars and tulips at the base. A lumber company shows hardwood capable of taking a beautiful finish; a Parkersburg mill company has an exhibit of brush handles and wainscoting, and the Standard Oil company one of the barrels used in its export business.

North Carolina has an extensive and varied display, rugged specimens and photographs of timber trees conveying an excellent idea of her forest growth. Here also is a large display of nuts, seeds, cones, and bark, and a small collection of balsam, turpentine,

HOUSEHOLD WOODENWARE

CORNER OF MINNESOTA SECTION

and other products of the pine, for which the state is noted. The exhibit is arranged in a series of cabinets, the bases of which are composed of native woods, and the upper portions of large photographs of the forests from which they were cut, some of them 7,000 feet above the level of the sea. A valuable feature in this section is the views which illustrate the results of scientific forestry, as conducted on the Asheville estate of George W. Vanderbilt. In one of the corners is the graceful form of the palmetto tree, the symbol of the sister state, which is not represented in this section of the Fair.

Among the many interesting groups lying south of the main vestibule are the Jesup collection of American woods, and the exhibits of California and New York. The Jesup collection is a duplication of the cabinet in the New York museum of natural history, similar in scope to the display of native woods in the Government building. Each of the 430 specimens is labelled with an outline map, showing the area in which the tree is indigenous, together with a description of its characteristics. Here, for instance, one learns that the hemlock belt ranges from an altitude of 2,700 feet in British Columbia to 10,000 feet in the sierra of central California; that the Douglas fir grows from 200 to 300 feet in height, and that it is the most generally distributed timber tree of the Pacific coast; that the arbor vitae flourishes best in the swamps of the north, and the cottonwood on the banks of the Ohio river, and that the balm of Gilead species has as its territory Canada, the United States westward to Colorado, and the entire northwest as far as the Arctic ocean.

INTERIOR OF OHIO PAVILION

WALNUT LOG FROM KANSAS

In the adjacent exhibit of California the redwood, laurel, walnut, maple, elm, locust, madrona, and the so-called big trees stand row by row like gigantic sentinels, their faces polished, and displaying all the beauties that timber can be made to assume. To many visitors these are somewhat of a revelation, for here were for the first time shown to them the excellencies of California woods for cabinet and ornamental purposes. Here also are festoons of cones, burls of curious shape, and an unadorned section of a redwood that might serve for an ordinary table.

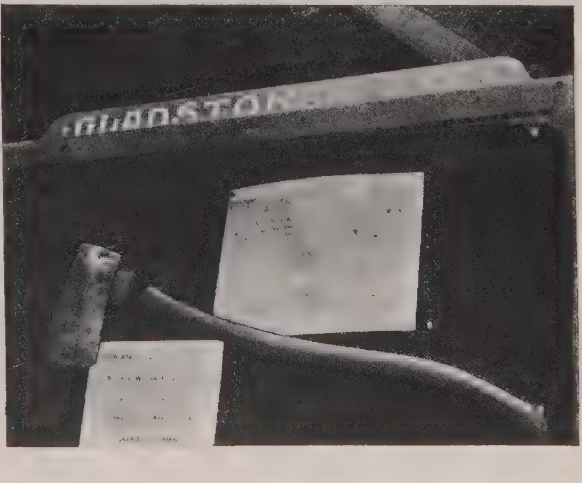
The New York state exhibit, which occupies a large space in the eastern portion of the hall, presents a striking illustration of the forest growth of the empire state. In revolving frames are thin sections of her trees, with their seeds, bark, and leaves, and within each frame are photographs, one showing the tree from which the different parts were taken, and another a portion of the trunk. Among the collection are such varieties as the Norway pine, the English cherry, hickory, spruce, balsam, balm of Gilead, fir, tamarack, larch, hawthorn, cedar, sycamore, black walnut, poplar, hackberry, birch, elm, ash, maple, and chestnut. Many of these are also reproduced in photographs, together with landscape scenes adjacent. Another feature in the New York exhibit is that which shows the texture of different woods, and different portions of the same wood. Sometimes the specimens do not exceed the twelve-hundredth part of an inch, and when placed against the light, not only show forms of geometric combination but reflect colors of exquisite tint. When examined under a microscope even greater wonders are revealed.

CANADIAN EXHIBIT

In the southern section of the hall Connecticut has a rustic booth of cherry wood, its specimens of burl oak, walnut, pine, ash, hickory, etc., in sections of which one side is polished, and with seeds, foliage, and twigs as adjuncts of the display. No less artistic is the exhibit of Massachusetts, both of them demonstrating that while eastern woods are of smaller size, the grain is finer, and the timber more durable than in western varieties. A New Jersey firm in this vicinity shows some of the uses of eastern spruce and poplar in a group of tubs, pails, bowls, measures, and pans, pressed from the pulp of these woods, and said to wear like metal, besides being odorless and seamless.

ENTRANCE TO QUEBEC SECTION

In this vicinity Colorado places a giant poplar cut from the first tree planted under her timber culture act of 1877. Great firs, spruces, and other varieties form the corner pillars and base of the booth, while above are the trunks of such trees as the black-thorn, dog-wood, hackberry, wild cherry, black cottonwood, dwarf birch and maple, hazelnut and mountain mahogany, some of them taken from the cañons of the foot-hills, and others from the mountains thousands of feet above. In a series of frames are sprigs from the yellow and fox tail pine, the black birch, red fir, cedar, sage brush, box elder, and quaking aspen; also a row of jars filled with buffalo berries, wild plums, choke cherries, and seeds of



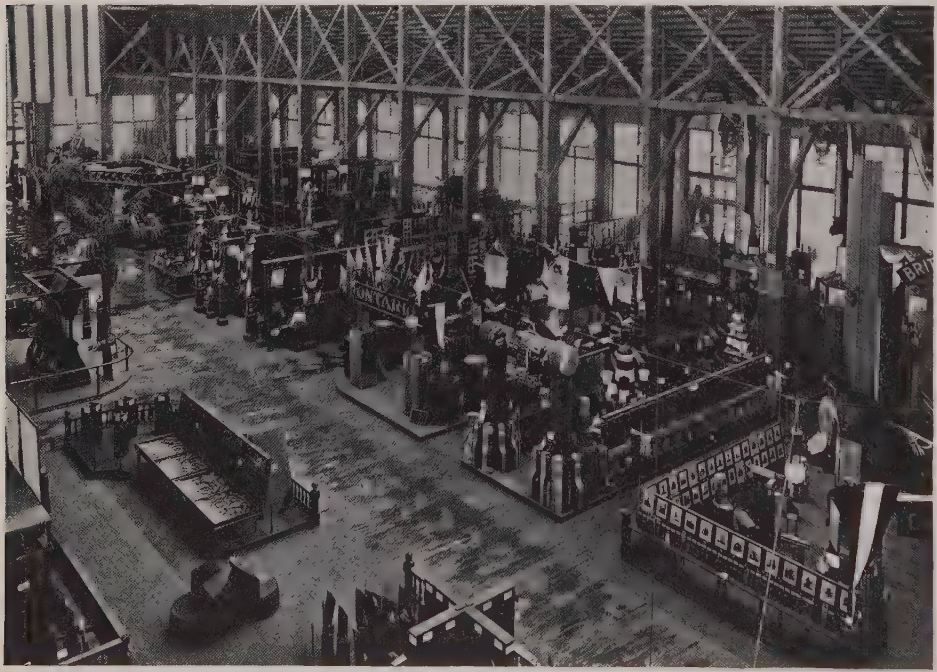
SLABS FROM AUSTRALIAN FORESTS

the Douglas fir and balsam. The bulk of the silver state's exhibit comes from her agricultural college.

Close to the Connecticut pavilion are the exhibits of Florida, Arizona, and Idaho, the woods of the peninsula state being mostly furnished by railroad companies. Those of Arizona and Idaho consist mainly of pine, the former state asserting that while she has been called a treeless desert, there are within her domain 2,000,000 acres of pine untouched by the woodman's axe.

ENTRANCE TO ONTARIO PAVILION

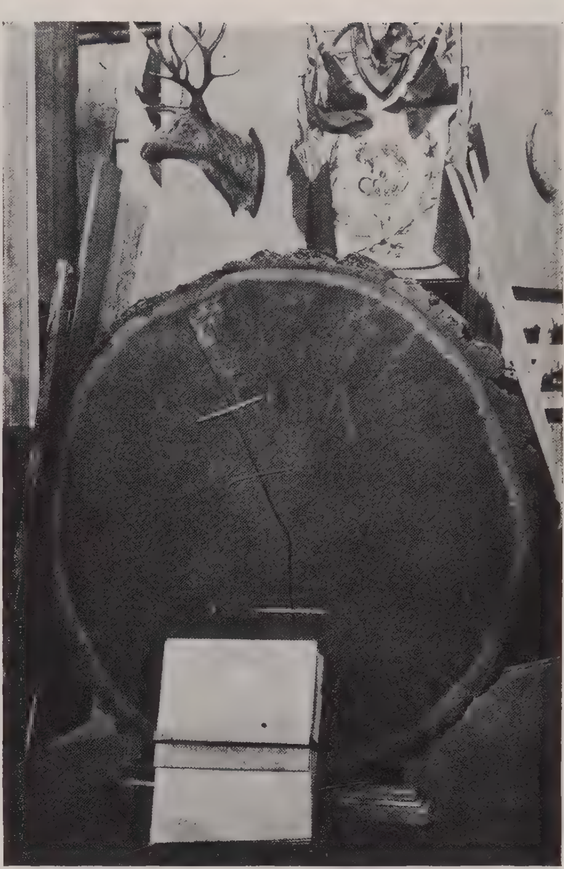
In the southern portion of the hall of Forestry are grouped the individual exhibits, one corner being filled by a mammoth redwood wine tank, constructed within the building by a San Francisco firm. Across the way is a pyramid of tubs, pails, and other wooden ware from a Chicago house, and near by is a large assortment of wooden knives, forks, rolling pins, scoops, bowls, and medallions. A pulp and paper company shows in a series of jars, with explanatory labels, the processes through which spruce chips pass, from the crude material to the bleached pulp, and to colored rolls of paper. Not far away are booths in which is shown cork in various devices, some of them approaching the artistic, such as pictures made of the shavings and other fine sections, one of the exhibitors reproducing St Peter's and picturesque scenes on the Rhine, with remarkable fidelity. Among other exhibits are trees in their natural state, and trees of which nothing is left but their outer coverings, or the portions from which the cork is cut. There is cork piled up in slabs like cord wood, and cork tables, towers, and pavilions.

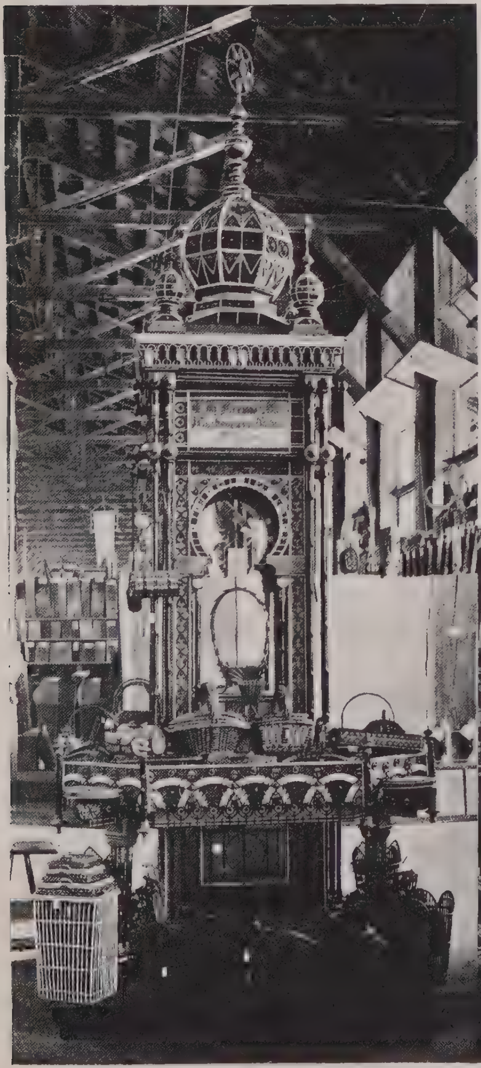


ONTARIO EXHIBIT

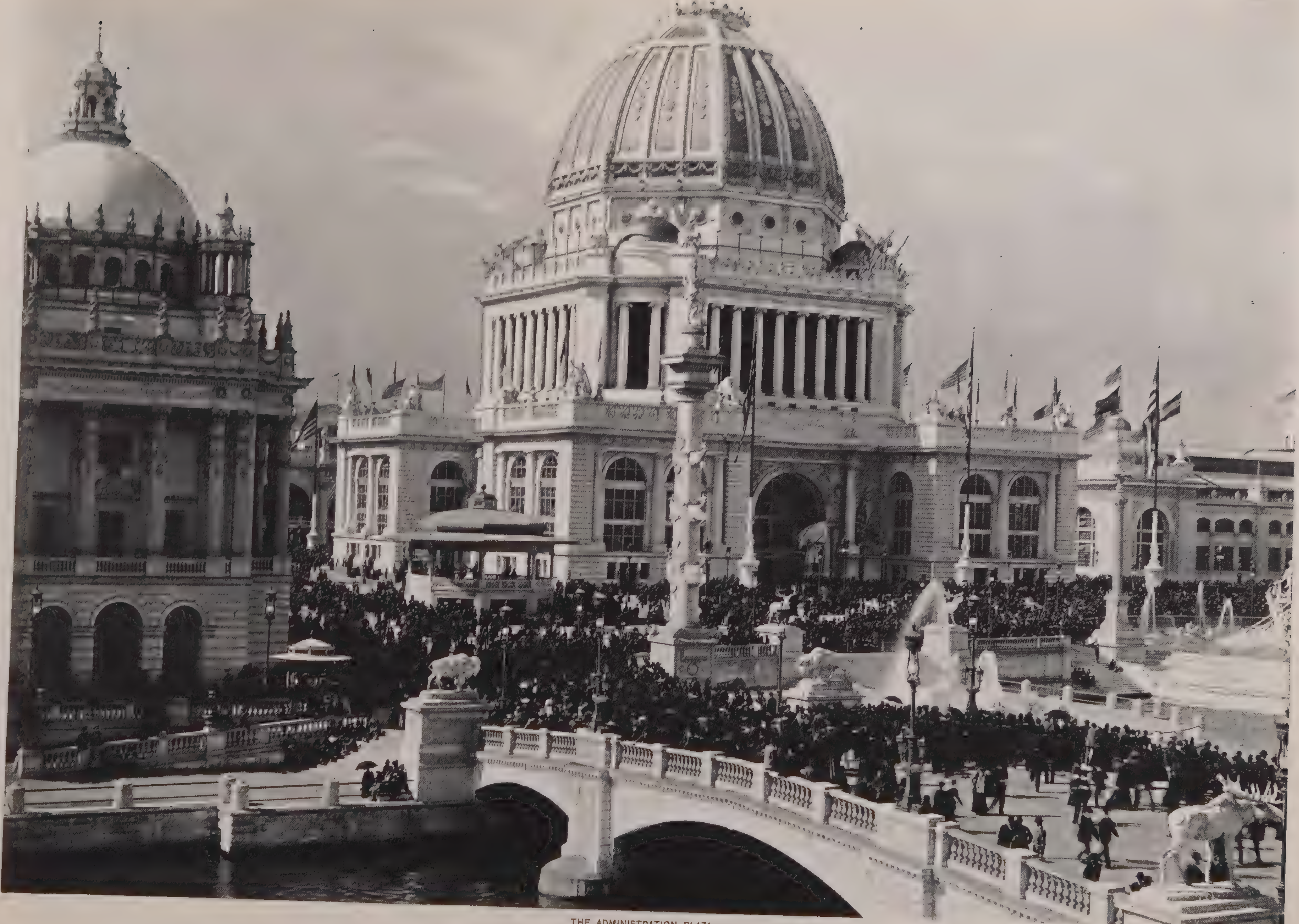
Near these are specimens of wood-turning, in the form of snakes coiled for attack, billiard balls, charms, watch-chains, stair and chair ornaments, flowers, and nearly everything that has been accomplished in the way of decorative wood-turning. A choice and varied display of foreign woods is that of the E. D. Albro company of Cincinnati. Upon a large platform, above which are the flags of many lands, is grouped an array of polished slabs, such as are used in cabinet work. Surrounding the platform are rows of upright posts, cut from valuable timber, as the ebony of Ceylon, the red Brazilian tulip, the rich brown lignum vitæ, the fine grained and yellowish shittim from Palestine, and the Amazonian cocobola, rosy red, and with patches of gold near the bark. Piled high upon the platform are slabs of mottled brown Persian walnut, yellow Brazilian satin-wood, the Turkish ash, and the white mahogany of Mexico with its delicate cream color. Near by is a collection of implements, such as are used in lumber regions, and adjacent to these a group of household appliances in structural form, manufactured from the aromatic cedar of Virginian forests. A Detroit firm displays a large plank from a California redwood, with the oil finish of which it makes a specialty. A Chicago establishment has a pavilion composed of many varieties of wood, in the finishing of which its varnishes are used, and a manufacturer of wooden faucets, saturated with india rubber, has a structure built of bark, with arched doorway whose keystone is of cork.

The northeastern quarter of the Forestry building contains, in addition to the exhibits already described, those of Pennsylvania, Ohio, Wisconsin, Minnesota, Nebraska, North Dakota, Oregon, Virginia, Louisiana, and Kentucky. The display of Louisiana, whose forests are yet almost untouched, forcibly illustrates one of the great resources of the southern states. The pavilion is of cypress, pine, oak, ash, and other native woods, surmounted with a cupola, and with pillars and ceiling handsomely carved and inlaid. In the decorative scheme are reproduced the leaves, flowers, and branches of Louisiana trees, and within are represented in various forms her sturdy oaks, her lofty pines, her graceful willows, her rapid-growing chinas, and stately beeches and ash, with the creamy-blossomed magnolia, the fan-like palmetto, the wide-spreading elm, the moss-hung cypress, and the odorous cedar. Some of the specimens are in the form of large square blocks, one side retaining the bark, and the other showing the wood stripped of its outer covering, with samples of hewn timber, such as reveal the beauties of the polished surface. Upon the blocks are partially manufactured articles, illustrating the uses, commercial and ornamental, to which the wood may be put. An interesting series of maps and charts explains how the timber is cut and floated along an intricate system of bayous to the saw-mills on the Mississippi.


DOUGLAS PINE FROM BRITISH COLUMBIA


WILLOW WARE IN GERMAN SECTION

FRENCH WILLOW BASKETS

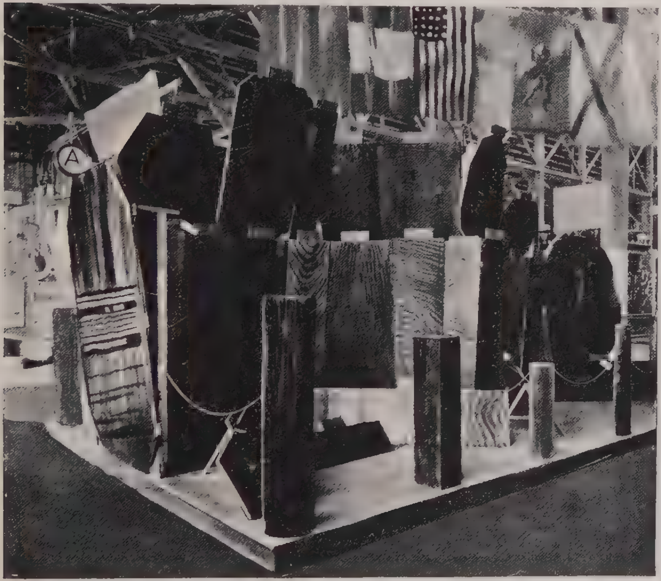


THE ADMINISTRATION PLAZA

INTERIOR MEXICAN PAVILION

Virginia has but a scant display of forest woods, while Kentucky is somewhat of a surprise. The entrance to the latter section is through a hollow segment of a sycamore tree, sixteen feet in diameter, which grew in the neighborhood of Fairview, the birthplace of Jefferson Davis. To the right is a huge yellow poplar; to the left a great white oak, and in a series of pyramids are native woods in 150 varieties, while in a relief map are shown the timber areas, the logging streams, and other matters connected with the lumber interests.

Minnesota has also an interesting exhibit in her rustic pavilion surrounded by a fence upon which are perched in life-like form, birds, gophers, and other specimens of her fauna. The display is of an instructive rather than a massive character, such as might have been expected from her boundless forests, and the numerous industries connected therewith. A few blocks of pine there are, bearing carved stars upon their faces; but elsewhere are only simple specimens of cultivated trees. A section of European larch is shown, which is said to have grown further north than any tree of its kind. A block of Minneapolis cottonwood is historic, for it was hewn from the first tree planted in that city, nearly forty years ago. All the native varieties are on exposition, and among transplanted species are the Russian mulberry, the Lombardy poplar, the Scotch and Austrian pine, the Norway spruce, the diamond willow, and the European larch.



POLISHED FOREIGN WOODS

In connection with the Minnesota display may be mentioned her State Forestry association, by which the exhibit was organized. To this institution credit is due for its efforts in calling attention to the wholesale destruction of forests, and the climatic and other evils resulting therefrom. It has also repeatedly urged upon congress the appointment of a board of forestry commissioners for protective purposes, and to promote the science of arboriculture.

Among the purposes of the Forestry department of the Exposition is to collect information from every quarter as to the amount of valuable standing timber, the effect of forest destruction on climate and soil, and the results which have followed the adoption of various timber culture acts. It is intended to demonstrate the wealth of our forests, ascertain the ratio of consumption and destruction, and the efforts made to counteract this destruction, through the preservation of timber tracts, and the planting of new areas. This is accomplished not only in the exhibits themselves, but in maps, photographs, reports, and literature devoted to the science of forestry. Nebraska and North

OUR SISTER REPUBLIC

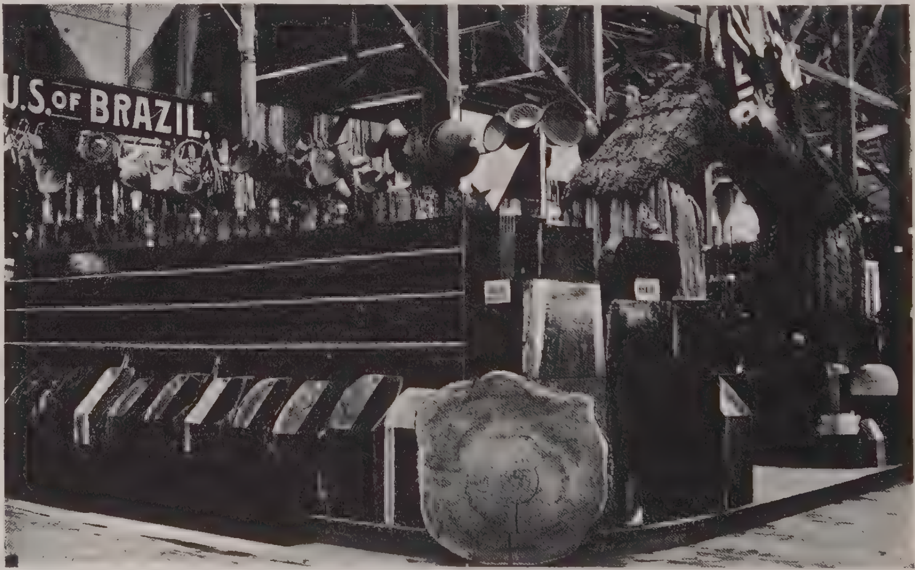
Dakota especially demonstrate the benefits of tree-culture, and one of the most prominent objects in the former section is a life-sized portrait of J. Sterling Morton, to whom Arbor day owes its origin, for many years a resident of that state, and now secretary of the national department of agriculture. The Nebraska pavilion is of the rustic order, with a mammoth cottonwood disk at one of the entrances, and on arches and pillars, composed of cottonwood, linden, honey locust, ash, and elm, are sprigs of green grown from the trunks since they were placed in Forestry hall. One of the curiosities here displayed is a horseshoe embedded in the heart of a big cottonwood hung on one of its limbs a dozen years ago, and imprisoned by its growth.

MEXICAN MAHOGANY BLOCK

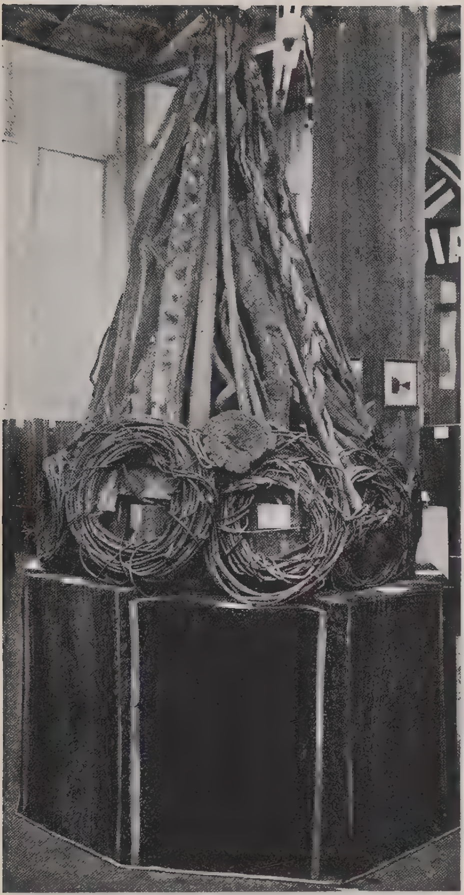
In the huge logs cut from planted trees exhibited by North Dakota, is shown what may be done in the way of arboriculture on prairie soil. A thick section of bark forms the back of a chair, the body of which is hewn from the trunk, and the various specimens are labelled with the ages of the trees, and the conditions under which they were planted. Near at hand is the square pavilion in which Ohio presents a complete display of medicinal plants, with more than eighty specimens of native forest trees in the form of twigs, leaves, flowers, fruit, and section of trunk and bark, in the rough and polished; the latter profusely illustrating the graining of woods suitable for turning, cabinet work, and interior finish. The walls of this structure are covered on both sides with framed specimens of herbs, bark, twigs, flowers, fruit, and foliage, the pillars forming samples of rough wood, and polished slabs the panels below the cornice.

At the northern end of the Forestry building Pennsylvania shows several hundred varieties of her native woods, together with a model saw-mill, with logs being drawn up its front incline, and in the yards behind piles of finished lumber, while on the roof are rows of water barrels as a safeguard against fire. Into the Oregon booth adjacent, the visitor enters between huge sections of yellow fir and spruce, the latter cut from a tree 305 feet high, and 16 at the base. Within, the commission has a beautifully finished office, the side walls formed of polished planks of fir and spruce, contributed by the lumbering and mill companies of Astoria and Portland.

In the northwestern portion of the Forestry building is a collection of cedar, pine, oak, cherry, cottonwood, and other varieties from the territory of Utah, one that seems out of place, pushed aside, as it is, into a corner among the foreign exhibits; for here is a valuable exposition of what can be done in the way of tree-planting under most adverse conditions, and nowhere has arboriculture been conducted with more of system and success.



Almost in the centre of the western division of the hall are the exhibits of New South Wales and Canada. In the Australian collection are more than ninety varieties of hardwood, enclosed by upright planks, polished to a distance of six feet from the floor, and forming an excellent sample of antipodean workmanship. From the top of the booths float the flags of the Australasian colonies, and above all is an ensign bearing the inscription "Advance Australia," which is seen in many other departments of the Exposition. The outer wall is largely composed of the most valuable of Australian timbers; ironbarks, red, grey, white, and black; gum trees, spotted, grey, blue, red, and white;



JAPANESE SLABS AND FIBROUS WOODS

blackbutt, woollybutt, and tallow wood. Some of them grow to a remarkable height, the blue gum-tree reaching an altitude of more than 300 feet. Piles of monster logs are trimmed to show the fibre of the tree, one of red cedar from New South Wales being nine feet long and six in diameter. There are also slabs of lignum vitæ, river oak, rosewood, quince, black oak, sassafras, myrtle, and elm, with sprigs, bark and seeds of the same varieties, and in large photographs, hung upon the walls, are depicted the vast forests from which they were taken. Among the most valuable forest trees of New South Wales are the red gum and iron bark, one of the uses of which is illustrated in a large pile of railroad sleepers in the centre of the enclosure. A few feet away is a photographic reproduction of Sydney streets, representing the paving of one of her thoroughfares with pine blocks. Pictures of lumber mills and factories indicate the development of industries whereby the raw material is transformed into primary forms of manufacture.

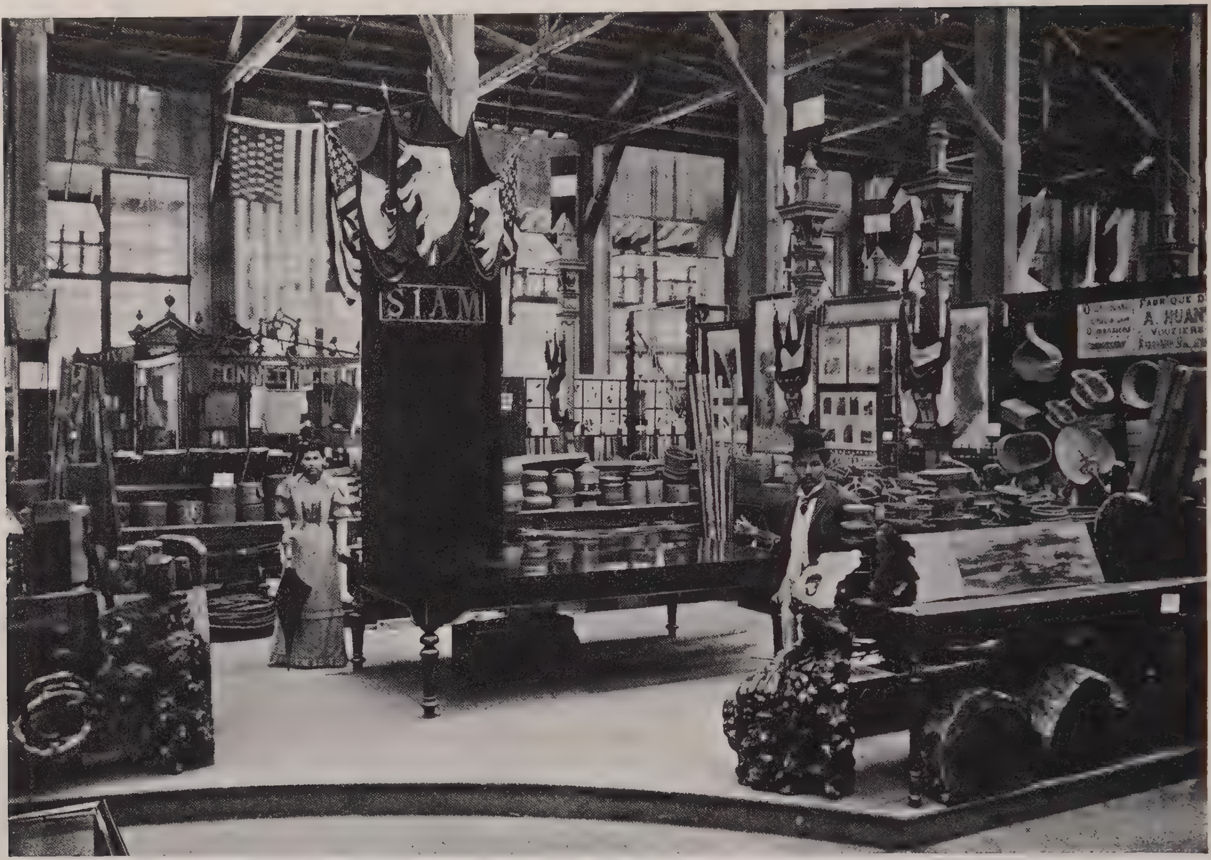
Massive logs, blocks, and slabs of timber, heaped within and around the areas occupied by Quebec, Ontario, British Columbia and the northwest territory display their wealth of pine, spruce, tamarack, cedar, balsam, birch, ash, maple, cherry, butternut, and other valuable woods. Quebec has a strong exhibit with many materials in the rough, and an exposition of the progressive stages in the manufacture of wood pulp. The entrance to her section is broad and square, composed of untrimmed logs, and a wigwam of bark in the rear is suggestive of the fragrance of her forests. Ontario and British Columbia have each a separate pavilion, the former showing a large picture frame inlaid with native woods, and a model of a church, also designed to display the variety of her forest products. British Columbia, whose pavilion is adorned with the heads of deer, has several of the largest sections of Douglas fir contained in the Forestry building.

ENTRANCE TO JAPAN SECTION

In the French section, adjacent to the Canadian groups, are specimens of cabinet woods, cut veneers, osier work, and mosaics in wood, fashioned and grouped with the skill and taste of the Frenchman. In paintings, photographs, and maps are scenes among the picturesque regions of the French Alps, thickly clad with the pine forests which the government protects with zealous care. There is also an excellent display of conifers, and of such forest products as pitch, tar, and resin.

The German collection is in the northwestern portion of the hall, grouped, for whatever reason, among those of South American nations. This exhibit may be considered as the chief exponent of scientific forestry, as represented at the Fair. In maps are shown the forest distribution in many portions of the empire, the changes in their condition under forest management, during a large number of years, and the temperature of the soil within and without the forests. Instruments are displayed recording the temperature of the soil, and measuring the growth of trees, and there are models of logging railroads and tree-planting tools. In a chart prepared by the royal forest inspector of Bavaria is explained the nature of the soils in his territory, and the experimental station at Munich describes, in an object lesson, the ravages of the

INTERIOR JAPAN SECTION



SIAMESE EXHIBIT

pine moth, while the forestry schools connected with the universities contribute to the interest of the display. There are also specimens of tannin and tannin extracts, basket ware, cork, and that which is made of cork.

Germany may be considered as the mother of scientific forestry among European countries. In the seventeenth century arboriculture was studied by her learned men, and a hundred years later was being systematically taught in her colleges. Meanwhile the movement had spread to Russia and Austria, and later, schools of forestry were also established in France and Spain, where before the application of remedial measures, many of the mountainous and wooded districts, formerly supporting large populations, had become almost deserted. To-day, apart from the United States, the governments of all the leading countries in the world so manage their forest tracts as not only to insure their preservation, but to derive large revenues therefrom. France has 7,500,000 acres of national forest lands, and individuals nearly twice that area. One half of the 20,000,000 acres of Prussian timber lands produces a net annual income of $6,500,000, while Saxony's 400,000 acres yield a return of more than $1,200,000. Here in truth are lessons which our own republic might profitably lay to heart.

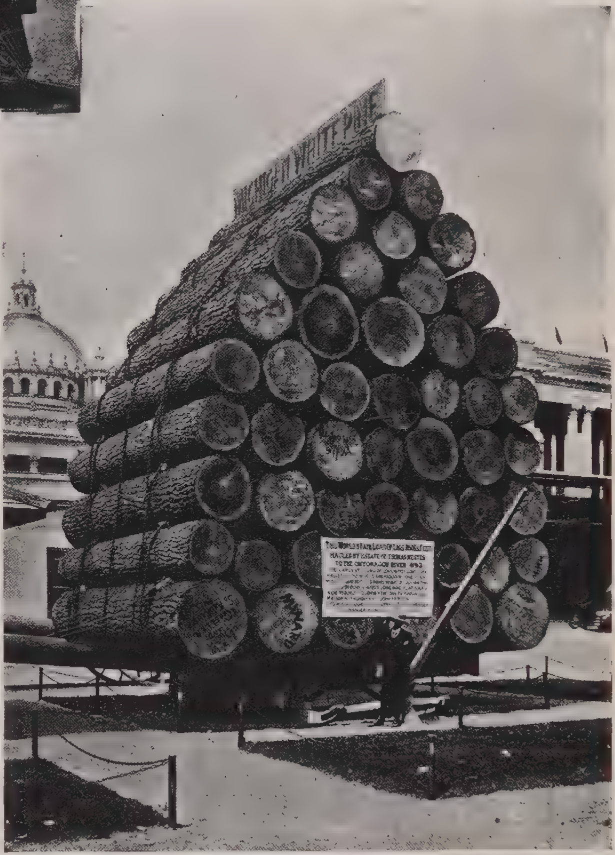
In the Russian section, photographs and maps convey information as to the areas covered by forest lands, and also reproduce the imperial hunting parks, and the pavilions erected thereon. Leaves and seeds are displayed in mounted specimens, and the department of the Volga furnishes models of the ovens used for boiling pitch, and the rafts that convey it to centres of shipment or consumption. The St Petersburg institute of forestry sends a collection of wooden implements from the peasantry, and the government of Kazan has a collection suggestive of the apiarian industries of that section of the empire.

Adjoining the New South Wales section, Mexico shows her woods, roots, fibres, dye-stuffs, and medicinal products. Four hundred different species of native woods are here displayed in the 2,000 polished specimens contained in a simple, rustic pavilion, its square main entrance, composed of disks, presenting a unique appearance. Resins, vegetable wax, copals, such as are used in the manufacture of varnish, and chewing gums, add variety and interest to the exhibit.

CARVED DOOR OF TEAK WOOD

LOGGING TRAIN

Brazil, the Argentine Republic, and Paraguay have remarkable collections of the woods used for ornamental purposes, together with barks, dyes, and medicinal herbs. The first has a large pavilion fashioned from small trunks and interlacing limbs, its main entrance in the form of an archway of Gothic architecture. Mahogany is a prominent feature, for this is one of the most valuable of Brazilian woods. Perhaps the finest of the cabinet woods are from the banks of the Tocantins, a tributary of the Amazon, a separate structure within the pavilion being composed of specimens from the forests of the great river. Among the collection are also samples of inlaid wood-work and basket-work.



LARGEST LOAD OF LOGS EVER DRAWN BY ONE TEAM

Of somewhat similar character are the exhibits of the Argentine Republic and Paraguay, each having some 300 varieties of wood and many medicinal plants. In the Argentinian section is a crocodile dragging its unwieldy frame over a mahogany stump. The main collection of woods is in the form of a truncated pyramid, surmounted by an octagonal block of fragrant cedar.

Crossing the central nave we come to the exhibits of Spain, the Philippine Islands, and Cuba, the features in which are the huge square timbers of Cuban mahogany, and the Spanish collection of native woods and corks. Close to the northern portal of the Forestry hall is an enclosure surrounded by a high bamboo fence, within which are the choicest of Japanese forest products. A special effort is made to show the adaptability of the woods to receive a hard finish, and the delicacy of their graining. A rough, brown piece of wood, labelled cinnamora camphora, is a specimen of the tree from the roots of which the camphor of commerce is manufactured. There are also such articles as bamboo, rattan, and lacquer ware, sago-palm baskets, wooden water-pipe, palm-ropes, charcoal, seeds, sap, nuts, and sections of trees, great and small. The national department of agriculture and commerce sends a collective exhibit, comprising timber and planks, cabinet, ornamental, and fossil woods, barks and galls for tanning and dyeing, vegetable wax and resins, wood pulp for paper, and maps, plans, and illustrations of forest management. Colored pictures of various trees and flowers are shown, and upon the outer walls of the pavilion are depicted in graphic art wild scenes of the mountain forests.

MICHIGAN LOGGING CAMP

Adjoining this, in the northwestern corner of the hall, is the Indian exhibit, where a British trading corporation displays samples of teak flooring and wood paving, railway wheel blocks, and specimens of fabrics dyed with cutch. Elsewhere are planks and slabs of vermilion and padouk, and a large door made of teak, the original of which is in the royal palace of Mandalay, Burmah. Upon it are scores of carved figures and architectural forms, representing the city, the king, queen, ministers, and the guardian spirit of the municipality, with other mythological characters.

Embedded among the individual and state exhibits are those of Siam and Trinidad, the latter with samples of rich red purple heart, of balsam, mangrove, guava, redwood, Spanish ash, and bamboos, in many sizes, together with specimens of what has been accomplished in several lines of manufacture. In Siam's collection, diagonally opposite from that of California, are more than 200 specimens of native woods, some of the smaller varieties in the form of baskets and rustic stands. The lordly teak is king of all, one solid slab, highly polished, being nine feet long, and six in breadth. Large sections of the taback and tamarind are also among the evidences of the forest wealth of Siam.

MODEL IN SILVER OF THE HORTICULTURAL BUILDING

World's Fair Miscellany.—Adjacent to the Horticultural building are propagating houses and frames, where space is assigned to exhibitors for growing valuable plants such as will not bear transportation. Here also are illustrated modern improvements in construction; a Swiss inventor, for instance, erecting a green-house of glass bricks which he claims to be proof against cold, hail, and other destructive agencies, while others show their systems of steam heating, ventilation, etc. A considerable area is also used for replacing faded or injured specimens.

Both for heating and sprinkling ample provision was made. For the former purpose there were three boilers, each of 150 horse-power, and an elaborate system of engines, fans, and steam pipes, by which the temperature of the dome and the front curtains of the hall were adapted to the most delicate of tropical plants.

Near where the Midway plaisance joins Jackson park are the nurseries for the propagation of trees and berries. A large plat on the northern side of the avenue is planted in California oranges, lemons, figs, apricots, peaches, prunes, grapes, etc., and on the opposite side France shows her careful and scientific methods of raising pears, peaches, grapes, and other fruits. There is also a large collection of evergreens in this locality, with a Wisconsin cranberry bog, showing all the processes of flooding, draining, and cultivating. Mexico has a section filled with characteristic plants; New York demonstrates how she would train grape vines, and a firm which manufactures nitrate of soda produces vigorous plants, nourished and stimulated by this fertilizer, side by side with others which, for want of it, appear as though sick unto death. In one corner of the nurseries is a mass of rank vegetation over which is a sign with the inscription, "What to Hit with the Hoe." Here are 125 varieties of weeds in actual growth, the exhibit being organized by a leading agricultural journal.

IDAHO EXHIBIT

Among the curiosities of Horticultural hall are the American fly trap and the California pitcher plant. The leaves of the former are furnished with slender, comb-like teeth, the upper surface being set with slender hairs which are extremely sensitive. When touched they contract and draw the leaf together like a book, entrapping the fly and holding it fast as long as it is able to move; when the insect is dead and motionless, the leaf unfolds. The lower portion of the pitcher plant is set with long bristles, inclined downward, like a certain kind of patented mouse-trap. Thus the unwary insect falls into the water with which the pitcher is partially filled.

CALIFORNIA WINES

To foreign countries was assigned about one-third of the entire space in Horticultural hall, and so great was the interest aroused that they would have taken the entire area had they been permitted. The first exhibit was received in the winter of 1892 from New South Wales, whose wines also received in midwinter were frozen and spoiled, but promptly replaced by other specimens.

Except for wood-pulp the Forestry exhibits contain no completely manufactured articles, though there are many in various stages of manufacture. In showing the structure and commercial value of woods, the usual method was to cut them into transverse, radial, and oblique sections, showing the heart and outer portions of the tree, leaving one-half of the specimen in its natural state, and polishing the remainder. There are also barks, gums, resins, and turpentines; lichens, mosses, and substances used for bedding and upholstering; specimens of herbs and roots having medicinal properties, and cork, both in rough sections, and partially manufactured. As a rule the states exhibit the wealth of their forests in their crude condition, while individuals display material in shapes which fall just short of manufactured products.

Not far from Machinery hall, Michigan has a typical loggers' camp. Everything is built of logs, even to the large chimneys of the cabin. In and around the building are specimens of all the tools used by Michigan lumbermen, from the opening of the first camp down to the present time. The dining room is remarkably neat, as also are the bunks, with their frames made of tree limbs. Side-tracked near the model is a lumber car, piled high with huge logs. The load weighs nearly 290,000 pounds, contains more than 36,000 feet of lumber, and before being delivered to the railroad in Michigan, was drawn on a sleigh for a distance of a quarter of a mile by a single span of horses.

California's exhibit in the Forestry building is a forcible reminder of the wonders of forest life on the Pacific coast. Attention first centres in the *sequoia gigantea*, as is called the king of all the big trees which have made California famous. They attain a height of 300 to 350 feet, and are the tallest conifers in the world, averaging fully twenty-five feet in diameter.

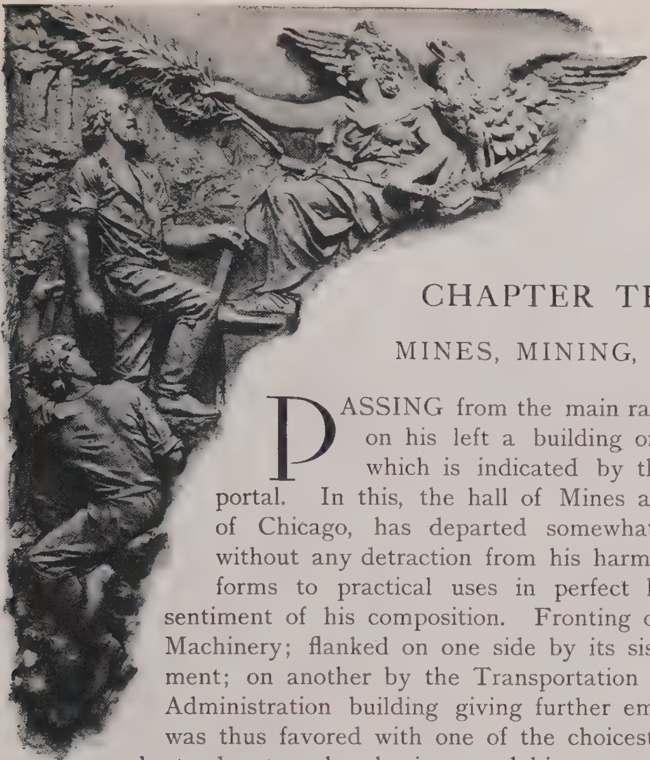
New South Wales and Mexico each claim to have within their domain the largest tree in the world. The Australian giant, a species of fig tree, is 485 feet high. Through the president of her commission, Mexico asserted that in the state of Oaxaca there was a tree of the leguminous species 53 feet in diameter, and while its height had not been ascertained, it was undoubtedly the king of the vegetable world. It has been christened Santa Maria del Tule.

"POMONA"

Besides having one of the largest displays in the building, Missouri contributed to the colonnade of trunks which surrounds it, specimens of yellow pine, oak, red oak, cypress, hickory, red gum, and ash. According to state authorities, the counties lying along the Mississippi river might have furnished much larger samples than those presented at the Fair. Nevertheless they are large enough to impress the visitor with the commercial value of timber trees which, not many years ago, were viewed simply as impediments to the agricultural advancement of the state.

Of the western states perhaps Minnesota has aroused more general interest on the subject of forestry than any other, realizing, as she does, the evils resulting from the denudation of her timber tracts. Here it is well understood that aside from increasing the beauties of the state, arboriculture equalizes the temperature and rainfall, breaks the force of wind and flood, supplies material for fuel and fencing, and furnishes an ultimate supply of timber which must become most valuable if the natural wealth of the state continues to be drained away.

A BIRD'S EYE VIEW

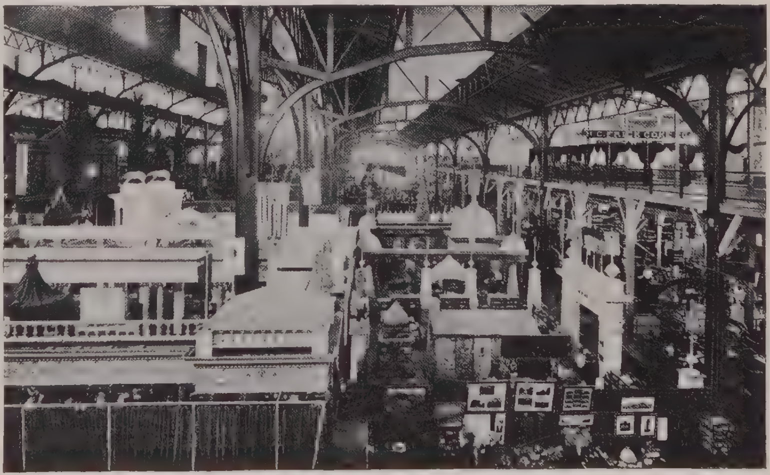


CHAPTER THE SIXTEENTH

MINES, MINING, AND METALLURGY

PASSING from the main railway terminus, the visitor observes on his left a building of elaborate design, the purpose of which is indicated by the single word inscribed above its portal. In this, the hall of Mines and Mining, its architect, S. S. Beman, of Chicago, has departed somewhat from conventional types, displaying, without any detraction from his harmony of plan, an adaptation of structural forms to practical uses in perfect keeping with what may be termed the sentiment of his composition. Fronting on the main court opposite the great hall of Machinery; flanked on one side by its sister edifice devoted to the Electrical department; on another by the Transportation pavilion, and with the graceful lines of the Administration building giving further emphasis to this imposing group, Mr Beman was thus favored with one of the choicest sites in the Exposition grounds, and to the best advantage has he improved his opportunity.

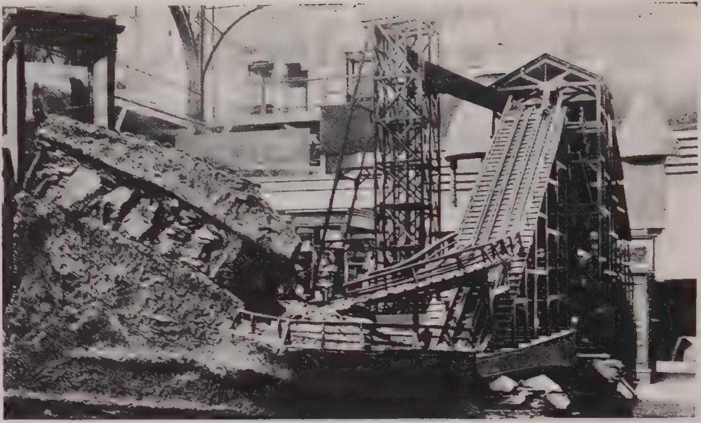
First of all it may be observed that in studying his design the artificer must prepare for the housing of a large and bulky display of ores and minerals, of mining and metallurgical machinery and appliances, many of them requiring a liberal proportion of floor room and height. Hence, in this building, and especially in its central nave, it was necessary to avoid, as far as possible, all columnar obstructions, leaving unencumbered the greatest available area for the reception of exhibits. Of the space at his disposal, including with galleries somewhat less than nine acres, a large portion was devoted to a nave 630 feet long, in its centre a circular court from which the main avenues radiate, and where is a design typical of mining industries. In all this spacious nave there are only sixteen pillars, eight on either side, and on which rests the system of cantilever trusses that support a lowered roof, fashioned largely of glass, and at its highest point nearly 100 feet from the floor. The aisles, which divide the building into four main sections, are similarly treated, and with their columns anchored against the inner rows. Thus is relieved the comparative depression of the curtain walls, whose height from ground to cornice is little more than sixty feet.



MINING EXHIBITS FROM THE GALLERY

A further accentuation is given by the principal entrances, one in the centre of each of the four sides, those on the north and south 80 feet wide, with richly decorated cornices, and flanked by pilasters, on which rest banner staves, their flags imparting to the outline somewhat of a holiday appearance, and modifying the serious aspect of the design. Around all the entrances are monuments, designs, and figures in keeping with the exhibits contained within. At the corners are square pavilions, lighted by arched windows on either face, and with low domical roofs crowned with circular lanterns. Between these pavilions and the main portals are piazzas 25 feet wide, with coffered ceilings, and from which there is access to the interior at several points. From either side of the entrance-halls broad stairways lead to windowed galleries, 60 feet wide, and affording an additional floor space of more than 100,000 square feet. Thence, from numerous openings, the visitor may step forth into recessed balconies, from portions of which is an excellent view of the structures and grounds adjacent.

In the elaboration of his design the architect has not adopted any special order of architecture, for in doing so he could not have given to his scheme an architectural expression in conformity with the character of the exhibits. The façades are of modern style; the roof planned somewhat after the fashion of those which cover the car-building sheds of the Pullman company. Elsewhere, and especially in the entablatures, are traces of Italian detail, mingled with that of the French renaissance, while in the loggias and balconies the treatment savors of the Doric and the earlier Romanesque. Finally it may be said that, whether from an architectural or utilitarian point of view, the hall of Mines and Mining does not suffer by comparison with its more imposing neighbors.


MODEL OF COAL MINING MACHINERY

As with the Fisheries and several other departments, this is the first of our great world's fairs at which mining has been placed on an equality with manufactures, agriculture, and all the more prominent industrial pursuits, and its exhibits ranked on a par with any, and housed in a building of their own. At the London and Paris expositions all such specimens were classed in a single group, to which was granted but a meagre allotment of space; and even at our own Centennial Exposition they were pushed aside into an annex of the industrial edifice. Here, however, due prominence is given to an industry which in value of production ranks third among those of the United States, many of its branches, before incorporated in other divisions, for the first time receiving in their proper place a fitting and adequate representation.

Says the chief of this department, referring to the scope and character of the exhibits: "They will cover the entire range of the mineral kingdom. They will include minerals of every kind, ores, native metals, gems, and crystals; geological specimens; coal, coke, petroleum, natural gas, building stones, and quarry products; graphite, limestone, cement, and artificial stone; salts, sulphur, fertilizers, and mineral waters; the long catalogue of iron and steel, and of tin, and the new metal, aluminium; the extraction of gold, silver, and lead by various methods; mining machinery, tools, and appliances; literature, models, and reproductions. When we consider the wealth represented by the quarries of New York and the New England states, the coal and iron of the Alleghanies, the phosphates of Florida and the Gulf, the oil and gas of Pennsylvania and Ohio, the copper of Lake Superior and the tin of the Black hills, the silver and lead of the Rocky mountains and the gold of California; with the immense manufacturing interests connected with the production and manipulation of our country's vast mineral wealth, remembering that there come into competition with her all countries and quarters of the globe, the varied and exceptional character of the mines and mining display will be appreciated."

INTERIOR OF MINING BUILDING

PENNSYLVANIA BRICK AND TILING

On entering the hall which contains these exhibits, the first question the visitor asks himself is "How did they get here? How were these mammoth specimens collected and transported from every quarter to be placed in congruous and symmetrical groups under the roof of a single edifice?" Perhaps in no time or place but the present could they have been got together; for years of persistent solicitation and careful planning were required before the more bulky articles were rolled on cars to the principal entrance way, to be lifted by cranes and moved on trucks into position. From the spacious central nave, sometimes termed Bullion boulevard, extend eastward the state and territorial pavilions or structural façades in metals or minerals, beyond which is the mining machinery; while to the west our foreign friends show what their several countries can produce. Among United States exhibits Montana's silver statue, Pennsylvania's needle of anthracite coal, and the geological obelisk of the empire state attract much attention. Among those of other lands may here be mentioned the elaborate collections of Germany, Mexico, Canada, and New South Wales, and the diamonds which in the spectators' presence are washed by Kaffirs out of the blue earth imported from Kimberley mines.

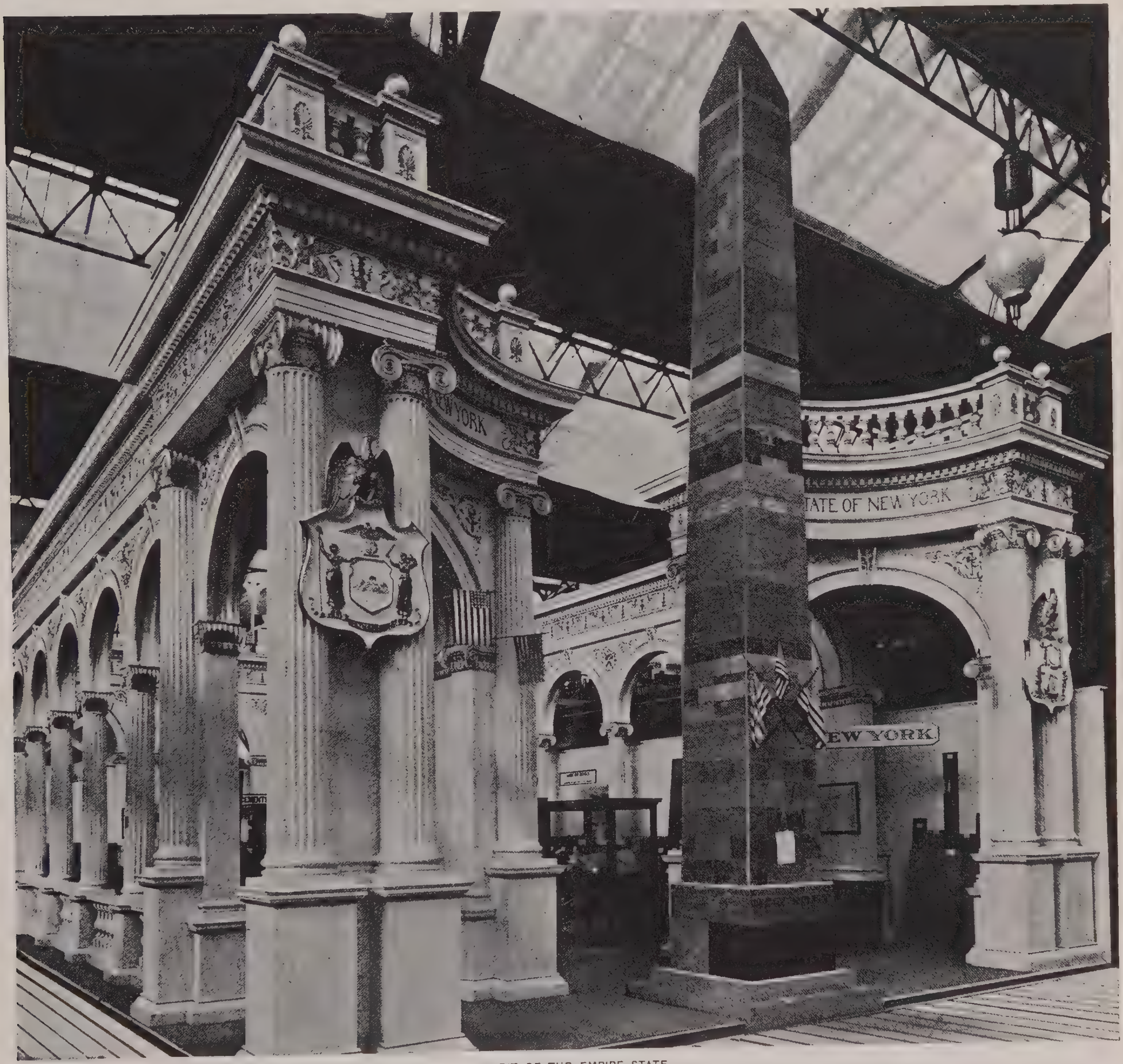
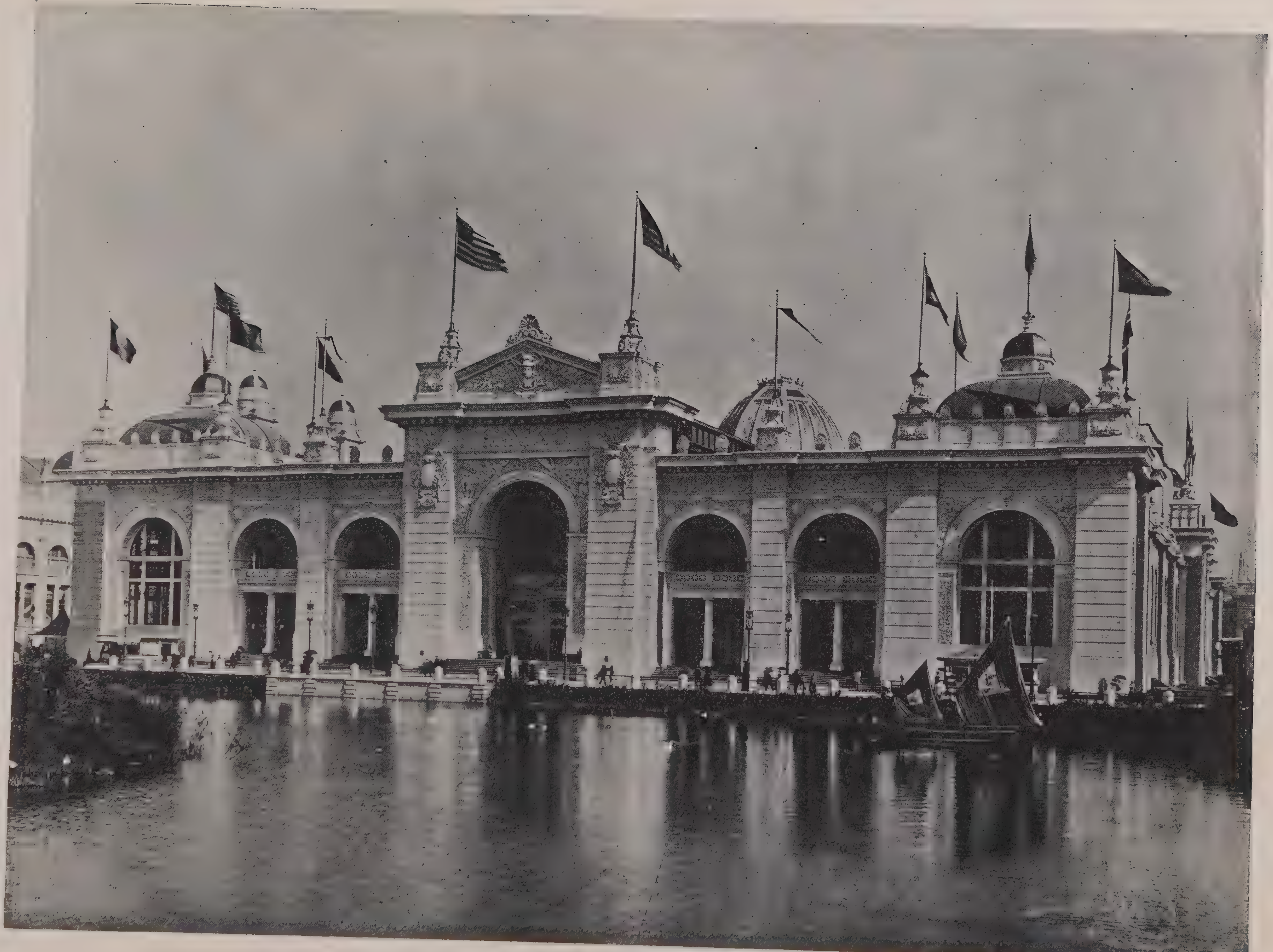


EXHIBIT OF THE EMPIRE STATE

On the gallery floor the largest of the individual exhibits are those of the Standard Oil company, and the Frick Coke company, the former displaying the several methods used in the production and distribution of oil, and the latter a model of their plant. Of scientific interest are the metallurgical displays arranged by the chief of the Mining department, and the collections of the Ward Natural Science establishment. In a series of courts are arranged in related groups all mineral substances of industrial, economic, or scientific value, with an assaying department in actual operation. Nor should mention be omitted of the library, catalogued for public use, and containing histories and statistics of mines and mining districts, with numerous charts and diagrams, together with maps and models illustrating the geological formation and distribution of mineral veins, and the modes by which they are worked. To the mining engineer or surveyor the collection is especially valuable, for here are treatises on every branch of his profession, including among others the location of shafts



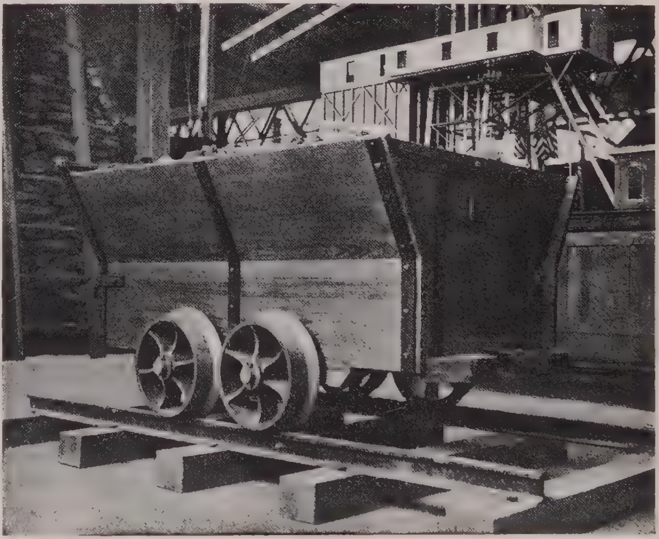
MINING BUILDING. NORTH FRONT

PLUMBAGO, NEW YORK SECTION

and tunnels, their sinking or boring and timbering, the sloping and hoisting of ore, and the drainage, lighting, and ventilation of mines. Finally, the visitor may compare the present with ancient methods, for there are some of the earliest apparatus used in mining and metallurgy, either as originals or reproductions.

Coal and iron are treated in broad lines; for in the United States these industries represent the investment of hundreds of millions of capital and afford employment to hundreds of thousands of men. Of bituminous coal the annual yield exceeds 100,000,000 tons; of anthracite nearly half as much, and of pig iron about 10,000,000 tons; the total value of their output, the two first as delivered at the mines being estimated at more than $300,000,000. Next in order of value, or very nearly so, are silver, building stones, copper, lime, gold, petroleum, natural gas, lead, and zinc, these and other metals and minerals increasing the total production to about $650,000,000 a year. In the exhibits contained in the Mining hall, quality rather than quantity is the feature of the display; and here the visitor may learn more in this connection than years of travel could teach him. In the coal collections for instance, are not only the varieties produced in different regions, but with many of the specimens are chemical analyses, and the results of tests whereby have been demonstrated their economic value and adaptability to special uses, with geological and other maps and drawings showing stratification, extent, locality, accessibility, and other valuable data. And so with iron and other products, all the groups being arranged and illustrated with special reference to the industries which they represent.

Near the northern portal of the hall, flanked on either side by the pavilions of France and Pennsylvania, is a lofty monument fashioned of cubes, which gradually decrease in size almost to a point. Those at the base are of massive proportions, and on several of them are inscribed the words anthracite, limestone, natural gas, petroleum, iron ore, and granite. Then come salt and other minerals produced in the United States, nearly all of commercial value having a place in the column. In these cubes are represented the proportionate bulk of all the minerals which come from the mines and quarries of this country during one second of time, asbestos forming its tip, gold ore second, and silver ore only a few removes from the top.



COAL CAR FOR MINING

Within the entrance of Pennsylvania's pavilion are displayed her petroleum and petroleum products in hundreds of glass bottles contained in neatly finished show-cases. Facing them is a large relief map of the state, representing the location of her principal coal and iron mines, her oil and natural gas deposits, blast furnaces, pipe systems, and railroads. In a small pavilion are shown the various uses of slate, as for pillars, roofing, walls, and black-boards. On the western side are exhibited in the form of truncated pyramids, grouped in rectangular shape, all the varieties of anthracite, with commercial samples and analyses, while at the corners of the rectangle are samples of bituminous coal. A colored drawing illustrates the manufacture of zinc oxide and spiegeleisen, the latter largely used for the manufacture of Bessemer steel. In bricks and other samples, crude and burned, are shown the many varieties of fire clay found in Pennsylvania, and next to these are tile clays in every form. There are also more than 100 specimens of building stones, with glass sands, the mixtures used for various kinds of glass, and the finished product. Soapstone, nickel, manganese, iron ores, and the several stages in the manufacture of iron, with the charcoal, anthracite, bituminous coal, and coke used for such purposes, are also on exposition.

An interesting exhibit is a complete working model of a coal mine, with engines and the work they do, from hauling coal up the incline until it is dumped into the screens and there assorted into sizes and loaded into railroad cars. Near by is a primitive iron furnace, of a pattern more than 1,000 years old, and grouped about it are rude implements such as Tubal Cain might have used. On the walls are photographs, charts, and maps of geological and mineralogical surveys, with relief maps and other illustrations.

But the most attractive feature is in the central court of the Mining hall, where is the shaft or so-called needle of anthracite already mentioned. This trophy is fashioned of solid blocks of that mineral, extracted from the Mammoth mine of the Lehigh Valley Coal company. It is more than 50 feet high, weighs nearly 100 tons, and to mine and place it in position was the task of many weeks, involving an outlay of several thousand dollars. The entire collection from Pennsylvania is gathered and arranged as a utilitarian rather than an ornamental display, and shows to excellent advantage her rich and manifold resources.

The exhibits of the empire state are also of a substantial character, with no attempt at ornamentation except for the pavilion which contains them, and a pagoda of terra cotta in one of its corners. The former is in the shape of a rectangular colonnade, the entablature resting on Ionic arches springing from pillars of uniform design, and the corners surmounted with handsome balustrades. The cornices and frieze are decorated with sculptured tablets, and the spandrels between the arches are ornamented with representations in relief of mining scenes and implements. In front is an obelisk constructed of rocks in the order of geological succession, the device of the geologist James Hall. Here it may be mentioned that, apart from local collections, this is the only complete exposition that New York has ever attempted of her geological formation and mineral resources, though in this state is found the keynote to the geology of a vast adjacent region.

A MODEL DISPLAY

Among the exhibits are samples of all building, ornamental, and other stones of commercial value, of which the state possesses an abundant store. There are likewise specimens of the solid crystalline salt deposits peculiar to her soil, with clays, gypsum, sands, and shale, the first including kaolin, and displayed in raw and manufactured forms, together with mineral paints, iron ores, and petroleum. A feature in the collection is the beautiful specimens of quartz and fluorite, and on the gallery floor is a large assortment of precious stones and minerals contributed by a New York jewelry firm.

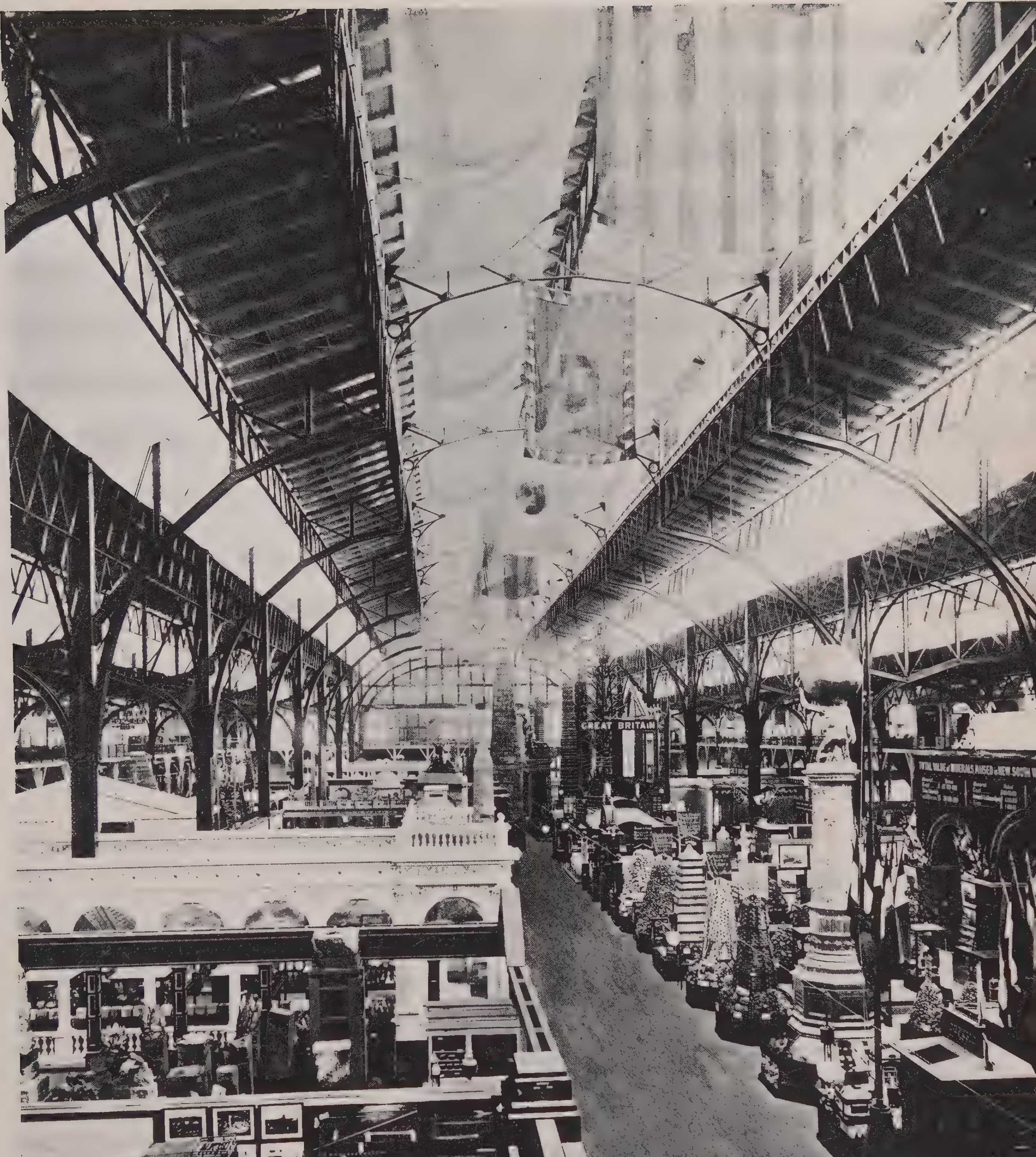
Adjoining the New York section on the east is the New Jersey pavilion, the greater portion of which is devoted to an exposition of her geology, illustrated by a large relief map. Along the walls are cabinet specimens of ores, building stones, and potters' clay, in the last of which the state is especially rich. Her production of zinc is somewhat remarkable; and here the information is conveyed that of the 1,000,000 tons of ore produced in the United States since 1873, 719,000 were contributed by New Jersey.

Either in the western galleries among the metallurgical groups, or in the eastern galleries among the specimens of building stone, all the New England states are represented with the exception of Rhode Island. From the Colby university of Waterville, Maine; from the Portland society of natural history, and various private sources, are collections of minerals and gems, a quarry company contributing a large urn of polished granite and a variety of smaller specimens. Harvard college sends to the Massachusetts section many rare fossils, large slabs of stone showing the foot-prints of some mammoth of the antideluvian era. Granite and marble, gneiss and hornblende, corundum, emery, and graphite, with an abundance of ores and gems, virtually complete the collection of the old Bay state.

New Hampshire, Vermont, and Connecticut display their granites and marbles in the eastern galleries. In the New Hampshire collection are many specimens of mica, and pillars and a massive table are constructed of the stone for which that state is famous. The granites of Connecticut, principally gray and red, are also the prominent feature of her section. Vermont, while showing several beautiful varieties of granite, upholds her reputation as the producer of some of the best marbles from the quarries of the United States, the specimens being displayed in a circular portico of Grecian architecture. Many of the cases within contain cubes of the best known American varieties, and the famous marble quarries of Rutland contribute largely to the general effect.

SECTION OF MINERAL CABINET

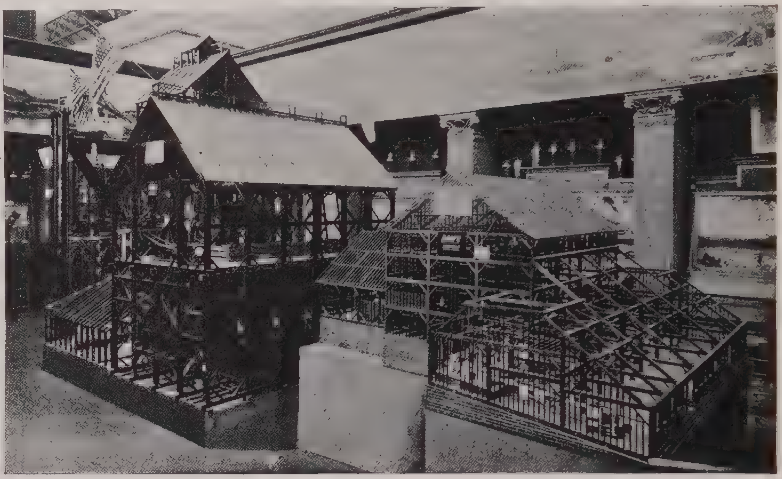
One of the most interesting and unique of the scores of pavilion elevations in the Mining hall is that of Kentucky, in the background of which is depictured the entrance to her mammoth cave, while beneath it is reproduced a section of the cave, to which a trap-door affords access. The façade is a temple-like structure



GENERAL VIEW DEPARTMENT OF MINING

of Gothic architecture, and, together with the wide open archway in the centre, is built of cannel coal, its effect increased by contrast with the white marble edifice of the empire state. Its plan was suggested by the portal of the Virginia Military institute in Stonewall Jackson's native town. While consisting largely of coal, as might be expected from a region with 14,000 square miles of bituminous coal deposits, and with a yearly output of more than 3,000,000 tons, the exhibits of Kentucky are as varied as her resources, and include marble and other valuable stones, tile-clay, copper, iron, gold, and silver, all displayed as minerals, ores, or metals to the best advantage.

Ohio's section is enclosed by a handsome colonnade, constructed entirely of minerals found within her borders, and intended to present in picturesque form her resources in that direction. One of the passage-ways is fashioned of tiles, and extending over the entire length of the floor space at the northern end are alcoves containing specimens of quartz. In show-cases are mining and mineral samples, and in the centre are models illustrating the manufacture of table salt and the machinery used for pumping oil from Lima's productive wells. In the galleries Ohio is well represented in the metallurgical exhibits organized by Frederick J. V. Skiff, the chief of the Mining department, and here also are several collections from her university and colleges of agriculture and the mechanic arts.



MODEL OF MICHIGAN MINING BUILDING

Representing as they do one of the most prolific districts in the production of building stone, the exhibits of Indiana, both in the construction of her pavilion and its contents, are somewhat of a uniform character. The four granite pillars which support the entrance harmonize in coloring with the whitish grey of the limestone, the latter a prominent factor in the mineral wealth of the state. The quarries at Bedford are especially noted, and thence were gathered the bulk of the limestone specimens ranged along the centre of the section. Opposite are large blocks of coal, for which Indiana is famed, both as to quantity and quality of output. Elsewhere are cabinet specimens of building stone, and samples of petroleum oil, brick, tiling, and other clay products, while near the western entrance to the Mining hall is a stately pillar of oolitic limestone from Bedford deposits.

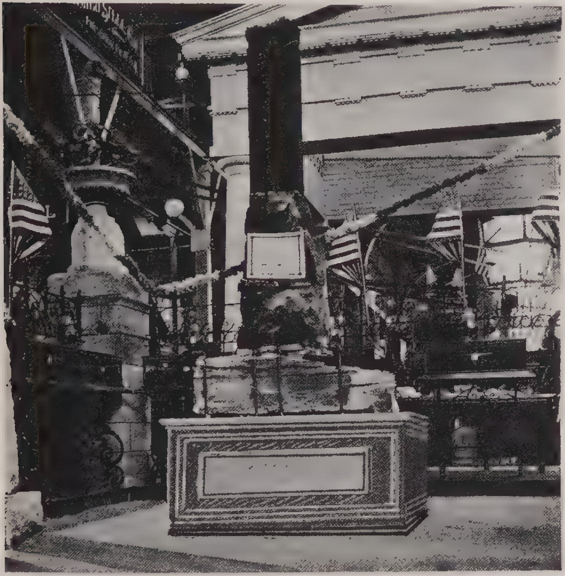
Michigan occupies a place of honor, fronting on the central court, and with the largest space allotted to any of the state exhibits. Among the materials used for her pavilion are specimens of building and ornamental stones, with other minerals taken from Michigan mines and quarries. The archway is of native sandstone, its dome-like interior lined with copper, on which are displayed the mineral products of the state fashioned in the form of shields, with the coat of arms on medallions, and above all an allegorical group representing two miners whom the presiding genius of that industry is crowning with wreaths of laurel.

Fronting on the central nave is a large diagram showing a cross section of a mine operated by the Cleveland Cliffs Iron company, and representing its geological formations, with the system of shafts sunk to three successive levels before the ore body is reached. On two of the interior walls are pictures of the more prominent mines in the upper peninsula, as the Pittsburg, Barnum, and Salisbury, around which are heaps of timbers and snow-covered piles of ore. The famous Calumet and Hecla mines, and the stone quarries of Marquette, are also reproduced in graphic art; and among scenic views are those of Lake Angeline before its waters were drawn off, and of Todd's harbor and Isle Royal. One of the exhibiting companies shows the levels of its mine in sheets of glass on which are indicated the locations of drifts and tunnels, while elsewhere are models of machinery, mills, and reduction works.

A COPPER MONSTER

Michigan's display of minerals is both interesting and instructive; including specimens of the richest iron ore found within the state. There are samples of gold ore found near Ishpeming, assaying $10,000 to the ton, with silver ores, marble of different kinds and colors, verde antique and serpentine, and granite and whetstones. These specimens are for the most part taken from private collections, as are also graphite, fire and common clay, fire sand, coal, amethyst, agate, and chlorastrolites, the last a beautiful mineral, and found only in Spain and on Isle Royal in Michigan. Among other samples here displayed in profusion may be mentioned red analcimes, abophylites, preahnites, dalholites, stilbites, dolomites, and calcites. Then there are pipe ores, kidney ores, needle iron ore, grape ores, epidotes, and calcite crystals, containing native copper, yet indeed representing but a tithe of the more valuable and useful portion of the collection.

But copper is the main feature in the Michigan section, and in truth the display is a generous one, including native copper, copper ingots, bars, sheets, cakes, and wires; rag, nail and fan copper; ores, conglomerates, and amygdaloids; battery and tailing samples, and copper in what other forms soever it is found or fashioned. The largest mass is of native copper, weighing 8,500 pounds, with others almost as bulky, composed of the richest of ores and conglomerates. In the centre of the pavilion are two mounds of copper, one constructed of wire, at the base of which are sections welded by an electrical process whereby wires can be produced of indefinite length.


FROM THE FAMOUS PIPESTONE QUARRIES

Among the more curious exhibits are prehistoric tools found in the mines, fashioned of native copper, and in the form of knives, spear and arrow heads, adzes, and hammers. These are among the state contributions; and no one can tell how they were made, for the metal is hardened and tempered by a process which modern scientists and mechanics have failed as yet to discover. As to this process it can only be said that thousands of inventors have tried in vain to reproduce it, and that to the aborigines of the Lake Superior region was known what is now a lost art, whereby weapons and tools were made such as cannot be duplicated by the most improved of modern methods. Says the official in charge of this exhibit: "It is claimed by several that tempered copper is now being placed on the market; but if the art is ever to be discovered, it has not been achieved so far. I have heard of men who have seen weapons or tools of the aborigines that would turn the edge of a steel chisel or dull a file."

The state which contains the home of the Fair reserves her strength for the machinery department in the Mining hall, and is mentioned in that connection. In Wisconsin's collection are fully illustrated her abundant mineral resources. Shafts of polished red marble support the arch above the entrance way; at the corners are monoliths of sandstone, and within is a temple-like structure, its dome upheld by fluted columns with Doric capitals. The floor is of black and white tiling, and the materials for the outside walls were furnished from Bayfield quarries. In the centre of the pavilion is a pagoda, at the corners of which are bars of lead and piles of iron, zinc, and galena ores. In pyramids and other forms are all the economic minerals and metals of Wisconsin, in raw or manufactured forms, including marble and granite; bricks, tiles, and terra cotta; jasper and serpentine; iron, copper, zinc, and lead; brown hematite of ochre, mineral paints, and the sands that are used for the making of glass. From Milwaukee are specimens of the so-called Wisconsin pearls, and from not a few of the exhibitors are entire cabinets of specimens, for many counties have contributed to the display.

Minnesota's home in the Mining hall is east of the Ohio section, her booth partially enclosed by a bronze fence of scroll-work, and the entrance-way of building stone from her principal quarries. Within is a remarkable display for a state that has but recently attempted mining on any considerable scale. Her principal exhibits are of iron, large contributions coming from the region tributary to Duluth, and including a great variety of specimens. About thirty companies are represented, and the samples shown by each contain not less than 63 per cent of metal, while several show nearly 70 per cent, a remarkable average considering the extent of territory from which they were taken.

Of iron ores there are many exhibitors, including a carefully selected group of specimens. Of building stones there is a special contribution containing 100 varieties, with samples of bricks and the clays from which they were made. From Duluth is a fine specimen

ORES OF WISCONSIN

of Lake Superior amethyst weighing 300 pounds. A group of jasper shows the highly polished quartz; another is in the rough, and a third consists of carved figures from stone of a reddish hue. From Sioux valley is also a handsome shaft of jasper polished by hand. Granite is well represented, especially in a pillar and shaft of this material, the latter of the speckled variety from Rockville. There is slate from Cloquet, brown stone from Duluth, and other varieties from various parts of the state. A unique structure is in the form of a mound, its base of Indian pipestone, upon which is a layer of jasper, then several feet of earth, with the greensward for a covering. The lower portion of the mound was quarried from the red pipestone quarries on the national reservation in Minnesota, near Pipe Stone City, and said to be the only quarry of its kind in the world. Since time immemorial the American aborigines have used this substance for their peace-pipes which Longfellow has described in his Hiawatha.

Among other features of interest is a model of the Chandler mine at Ely, showing the shaft houses, tools, and mining apparatus, as well as the geographical formation and the different levels, with the process of mining, hoisting, and timbering, and with miners carrying lanterns on their heads. Arranged along the inner walls are charts illustrating the geological survey of the state, while a large map shows the underground plan of the Minnesota mines at Soudon.

SECTION OF MISSOURI PAVILION

Beneath the stairway at the southern end of the Mining hall are the coal pillars of the Iowa pavilion, to which an ornate appearance is given by the judicious use of colored clays and sands. Within are mounds of iron, lead, and zinc, a miniature grotto constructed of material gathered from the caves of Dubuque county, and the display of a Centerville coal company, consisting of models of its works and cars, installed upon a platform of coal. There is also shown the interior of a coal mine, with full-sized figures of miners at work, and a truck filled with coal on the track ready to be hauled to the surface. The depth is only twenty-five feet, but by an ingenious device appearing as though it were several hundred feet. The mouth of the pit, over which are the words Iowa Black Diamond Hollow, is surrounded with solid blocks of coal. Adjoining the pavilion proper are cabinets of economic minerals, and a small section in which are shown by a marble company specimens of its stone in raw and manufactured forms.

To Missouri was assigned one of the four sections around the central court, where also are the exhibits of Michigan, Germany, and Great Britain. Her tasteful pavilion, with its handsome portal and colonnade, its decorated frieze and balustrade, is composed almost entirely of materials furnished by the state. The base is of granite from the syenite quarries of southeastern Missouri, the walls of brick from St Louis county, and the pillars, capitals, and frieze are of terra cotta. At the principal entrance-way are panels of onyx, and the coat of arms above it is surmounted by an eagle, with garlands depending from the shoulders of cupids.

SOUTHWESTERN ZINC

Within this structure are worthily represented the resources of a state which in 1892 produced more than 3,000,000 tons of coal, 131,000 tons of iron ore, of zinc ore almost as much, and 32,000 tons of lead; her yield of these metals for the year being estimated at $9,100,000, and the entire output up to that date at $178,000,000. On tables and in glass-covered show-cases of polished oak are countless labelled specimens, with photographs and models indicating mineral localities and features, and with mineral production and distribution displayed in chart and diagram form. In the centre of the pavilion is a large relief map showing the areas and locations of all the principal deposits of economic minerals. The value of the entire display is further increased by its methodical arrangement, with inscriptions and labels for the various groups of products, and for each of the specimens of which the groups are composed.

While coal, iron, lead, and zinc form the bulk of the display, there are numerous specimens of other metals and minerals, including copper and silver ores; blendes of various kinds; calcites, calamites, dolomites, and siegenites; ochres, glass-sand, clays, and bricks; sandstone, limestone, marble, and granite. Zinc is a special feature in the collection, as befits a state which produces more than one-half of the entire output of the United States. Some of the specimens are remarkable for range and brilliance of coloring; their shades varying, from black to a lightish yellow, while colorless crystals are arranged in tasteful groupings. The mineral is displayed in every shape, beginning with the crude ore as it comes from the mine, and displaying each successive stage up to the completed product in all its commercial forms. Lead is similarly treated, and near a table on which is a 1650-pound mass of zinc ore is a group of nearly perfect cubes of galena weighing 500 pounds, and almost entirely of pure lead from the Joplin mines. In the centre of this section is a pedestal of solid metal formed of specimens from various smelting works throughout the state. At the southeast corner is a pyramid of ore built of specimens ranging from a few pounds to several tons. From Greenfield quarries comes a handsome marble altar, and from St Louis county, a sample of nickel sulphide, of special interest to mineralogists.

MISSOURI LEAD

Arkansas, Missouri's geographical neighbor, occupies only a few square feet of space in the extreme southwestern corner of the hall, among the exhibits of Latin-American republics. There the state is represented by a small collection of minerals, consisting mainly of carbonates of zinc.

Upon the frieze of South Dakota's tasteful pavilion is the inscription: "First in gold mining machinery, first in new mines, and second in gold." In support of this claim are exhibited some remarkable specimens of gold ore, though perhaps more noteworthy is the collection of tin ores from Harney peak. Coal is but feebly represented; for the extensive deposits of South Dakota have as yet been little utilized. In the rear of this section are two life-size figures carved in sandstone, one of a pioneer prospector, and the other of a prosperous, well-dressed citizen of the present day. Among the attractions are also petrified woods from the neighborhood of Sioux Falls, and a tower of Portland cement from a Yankton manufacturer.

The Kansas section in the north of the hall corresponds to that of Iowa in the south, but is of smaller extent. Briefly, lead and zinc ores, metallic lead and zinc, rock salt and gypsum comprise the exhibit, among which are several fine specimens of galena lead, displayed at the entrance-way. Among the collective exhibits in the east gallery are also samples of Kansas cement, and of golden ochre from the Saline river.

The most striking feature in the section allotted to West Virginia is the exhibits of coal, specimens of which are seen at every hand and in all sizes and shapes. This is as it should be, since, both in actual production and in deposits still undeveloped, the state occupies a foremost rank. As is also evident from this display one of the most prominent industries is the manufacture of coke, while petroleum, both crude and refined, calls attention to another source of wealth. Building stones, fire clays, hydraulic limestone, and glass sand are here on exposition, with a refuse substance from a glass factory known as mineral wool which, in appearance and fire-proof qualities, is little inferior to asbestos. In the picturesque mountains of West Virginia are numerous mineral springs whose waters possess valuable medicinal properties, and of these there are a few samples among the more substantial collections.

COAL FROM WEST VIRGINIA

With the exception of West Virginia, the exhibits of the southern states are installed in the northeastern section of the hall, adjoining the department of machinery. North Carolina has the most elaborate display, and along one side of it are groups of limestone, white, blue, gray, and mottled marble, gray and pink granite, and gray and brown sandstone. In cases arranged along the section walls are many specimens of gold, both free and in the ore, with smaller collections of iron, tin, copper, silver, and coal. Sapphires, garnets, emeralds, smoky quartz, and other gems and crystals are shown, together with such useful products as kaolin, fire-clay, graphite, and talc, the last especially valuable in the manufacture of pencils. In crystalline and silicious forms are numerous samples of corundum, which serves as the basis of many preparations used by dentists and opticians, and also by workers in metal, for grinding, abrading, and polishing their goods. The mica deposits of North Carolina furnish an interesting collection, and the exhibit is diversified by a number of large photographs displaying various localities which nature has enriched with mineral deposits.

In Virginia's section, one of the most attractive features is the picturesque scenery along the line of the Chesapeake and Ohio railway, depictured in the background. Among the exhibits proper the most remarkable are two large masses of iron ore and coal, the former of which is the nearest approach to steel that nature has made, while the latter is a coking and almost smokeless variety, and combines more desirable qualities than any that have yet been mined. In the North Carolina collection are specimens of zinc, lead, and tin ores, the ores from which mineral paint is made, and granite, slate, and other building and ornamental stones.

Between the New Jersey and Minnesota pavilions a small section is jointly occupied by Louisiana and Tennessee. The latter presents a few specimens of iron, coal, building stones, and the clays used in the manufacture of bricks and tilings. Louisiana occupies the greater part of the space, and of special interest are the exhibits of chalk kaolin, and the clays used by the potter and the maker of imitation meerschaum pipes. There are also a few samples of iron, gold, and silver ores, of sandstones and whetstones, and of soda and potash; but the most striking exhibits are of fine, coarse, and rock salt, one of them representing a figure of Lot's wife standing in the foreground.

Except for a shaft of semi-bituminous coal at one of the western approaches to the Mining hall, and erected by a manufacturer of mining machinery, Maryland is without representation in this department. South Carolina and Florida find expression in the eastern galleries, especially in their lavish display of phosphates, the one from the Palmetto state being mainly contributed by mining and manufacturing companies of Charleston. Among them is crude phosphate rock, mined both from the river beds and the dry soil, together with strange forms of fossil life. From Florida are also samples of phosphates, both in its crude state and prepared as a fertilizer, the exhibit being arranged in a frame of native woods which shows the geographical outlines of the state.

GOLD, SILVER, COPPER, AND LEAD

Before describing the exhibits of the Pacific slope, whence comes our main supply of the precious metals, a few remarks may be of interest as to the relative yield of gold and silver, and the conditions evolved thereby. Of the total output of the United States, amounting for the century ending with 1892, to nearly $2,000,000,000 in gold and $1,200,000,000 in silver, less than one per cent was produced between 1792 and 1847. Then came the discovery of Marshall, who was about to throw away as iron pyrites a handful of what proved to be scales and nuggets of gold, picked up near the historic saw-mill in Coloma valley. In the single year of 1849 more gold was taken from the earth than during the half century which preceded it, production gradually increasing until in 1853 it reached its maximum value of $65,000,000, gradually diminishing to less than $40,000,000 in 1862.

Meanwhile the Comstock lode had revealed its treasures, and from an average of less than 40,000 ounces for many previous years, the total output of silver rose to 6,600,000 ounces in 1863, gaining in volume, though with many fluctuations, until for 1892 it was estimated at 58,000,000 ounces, for the waning yield of Nevada mines had been more than compensated by the product of Colorado, Arizona, Montana, Idaho, Wyoming, and other Pacific slope states. This was attended with a corresponding shrinkage in value, the price of silver in New York and London falling from $1.14 to 87 cents an ounce, or a decline of some 24 per cent for the decade ending with 1892, and with a still further depreciation in the following year. Between 1849 and 1860 the production of gold in relation to silver was in the ratio of more than fifty to one in actual weight. Thenceforth these conditions were gradually changed until, for the ten years ending with 1892, there were produced about twenty-five ounces of silver to one of gold, while for the last of these years the proportion was thirty-six to one. Here is the key-note to the silver question; for the precious metals are merely commodities, and like all other commodities, are subject to the inexorable laws of supply and demand. To place a fictitious value on silver is no more practicable than to place a fictitious value on coal or iron, on wheat or pork, and all such efforts can only result in making the United States the dumping ground for the loose silver of the world. Such, at least, are the teachings of political economy, a science the merest elements of which it would seem that many of our law-makers have yet to learn.

WITHIN IDAHO'S PAVILION

Though with a vastly diminished yield as compared with earlier years, California still occupies the foremost rank as a gold-producing state, her output averaging from $12,000,000 to $13,000,000, or more than one-third of the present production of the United States, while of the total yield, since 1848, more than two-thirds must be accredited to the golden state. Of silver her annual product is less than $1,000,000, and has never exceeded that amount. Of quicksilver a considerable amount is produced, the New Almaden mine alone contributing since 1850 more than 70,000,000 pounds. Iron is widely distributed; but can be imported at rates that almost prohibit local development. It was not until 1880 that the first smelting works in California were erected at Clipper gap in Placer county, with a capacity of 15,000

SPECIMENS OF GOLD AND SILVER ORE, IDAHO EXHIBIT

tons a year. Coal, though abundant, is for the most part in narrow seams, of inferior quality, and in localities difficult of access, the only productive veins of importance being near Mount Diablo, within a few miles of San Francisco bay. Of petroleum 8,000,000 gallons were obtained in 1884, and since that date a much larger quantity. The largest works are in Ventura county, whence the crude oil is conveyed in iron pipes to a shipping point on the coast. Asphaltum, formed by the evaporation of the volatile portion of the oil, is also plentiful in several of the southern counties.

Of copper there is enough to supply the demands of the world, but with less than $100,000 worth annually taken from its native gangue. Borax is largely produced in San Bernardino and Inyo counties, from a tract 10,000 acres in extent. In Lake county there are also valuable deposits, together with a sulphur bank, on the eastern shore of Clear lake, where sulphur was first manufactured in 1861. The first bar of tin, fashioned in the United States from native ore, came from a California mine; but, as an industry, tin mining has thus far proved unprofitable. Mineral soap, for which no better name has yet been adopted, was known to exist as early as 1849, and mineral paint has become an article of commerce. Building stone is abundant, a marble quarry in Tuolumne county being worked in 1857, while, near Auburn, in Placer county, is granite of excellent quality. Of mineral springs there are fifty which serve as health resorts, with twice as many more unknown to fame. Among metals and minerals but little utilized may be mentioned saltpetre, asbestos, antimony, platinum, chromium, mica, bismuth, zinc, and iridium. Such are the principal resources of California as a mining region, here mentioned not with intent to give special prominence to that state, but because, as elsewhere on the Pacific slope, these resources, apart from the precious metals, are as yet but little appreciated.

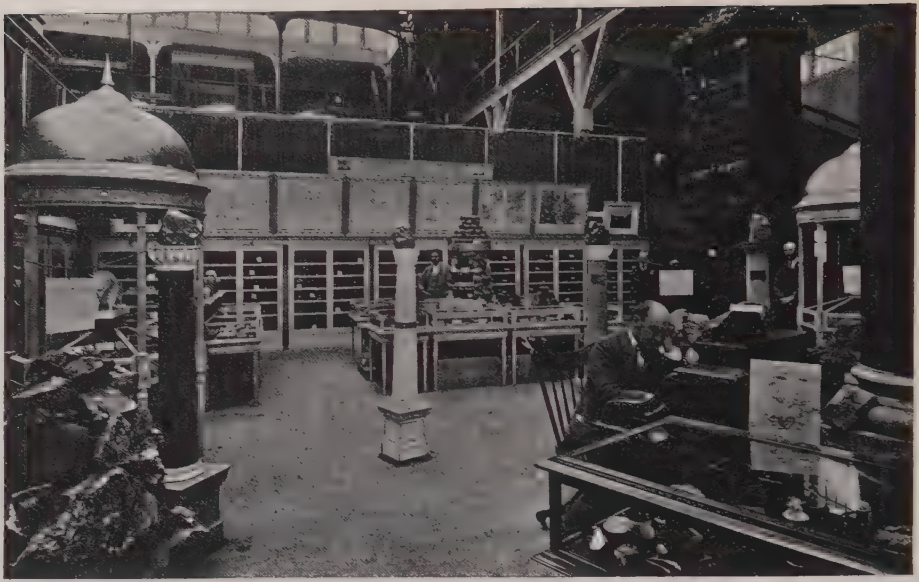
To the Pacific states a liberal space was allotted in the southeastern section of the hall of Mines and Mining, flanked on one side by exhibits of mining machinery, and separated by the central nave from those of foreign lands. In front of the group is the pavilion of the golden state, in which are displayed to excellent advantage her many varieties of building materials. The portal is constructed of various kinds of stone, in the form of a triple arch, thirty-six feet in length, with wings on either side, with base of dark granite and white marble columns from Colton and Inyo quarries. The caps of the columns are richly carved, supporting a handsome entablature, and behind them are pilasters of onyx, beautifully veined. The arches are of grey sandstone, the panels and pediments of variegated marble, and the wings of blue green-stone, nearly all the best of California's building stones, some of them highly polished, being represented in this pavilion.

The specimens gathered during a series of years by the state mining bureau form the basis of the exhibit, and to these were added contributions from private collections, forming together a valuable assortment of economic minerals, some of them almost a novelty to the scientific world. In double rows of show-cases are choice samples of gold and silver ores, containing some $20,000 worth of metal, and representing all the more prominent mines. Here also is the metal itself in various forms; but the centre of interest in the California section was the historical nugget which Marshall picked up from the Coloma millrace on a January morning in 1848, the finding of which revolutionized the commercial conditions of the world. This, however, was a treasure presumably of too great value to be trusted by its owner, even under the care of the Exposition authorities, and was removed not long after the opening of the Fair.

SILVER AND LEAD FROM UTAH

Upon the walls and around them are souvenirs and memorials of pioneer days, including a portrait of Marshall, photographs of hydraulic mining and mining processes and districts, among them Sutter's mill and mine, with the primitive rocker and pan, the mining methods of those days being a cross between Mexican tradition and Yankee ingenuity. In models is illustrated the science of mine timbering, especially as applied on the Comstock lode, in Nevada, in what is known as the crib system of timbering, invented by a German miner and scientist, Philip Deidesheimer by name. When a depth of some 200 feet was reached in the Ophir mine, the ore body was found to be 45 feet in width, thus rendering almost useless the post and cap system before in use, for such would not uphold the roof of the chamber. Then it was that this man came to the rescue, framing timbers in square sets or cribs from four to six in size, piled one upon another, and filled with waste rock, thus sustaining lateral as well as downward pressure. The plan was widely adopted; and but for this or some similar appliance, the deeper workings of the Comstock, which have added nearly $300,000,000 to the stock of precious metals, would never have reached, as later they did, a depth of more than 3,000 feet. In statistical and other forms much valuable information is conveyed, and here not a few among the pilgrims of the Fair will learn for the first time that of the total yield of gold, amounting since 1848 to $1,900,000,000 for all the United States, California has contributed $1,310,000,000.

Oregon's display, though unpretentious, was somewhat of a surprise to the majority of exposition sightseers. Coal, iron, and copper were known to exist in abundance; but few were prepared to see in this collection such specimens of gold and silver ores as are here exhibited. Among them are samples of gold quartz assaying several hundred dollars to the ton, one of them from the surface croppings of a recently discovered mine. Nearly all the mineral products of the state are represented, and in a model is shown the process of hydraulic mining. In 1891 Oregon produced more than $1,600,000 worth of gold, and some $300,000 in silver, the former the largest yield recorded up to that date, the principal mines being in the southwestern districts where the veins are small but rich. Since, in 1855, the first cargo of coal was shipped to San Francisco from the Coos bay mines, these beds have been worked without intermission, the maximum yield of 82,000 tons being reached in 1887, while the gradual decrease to 35,000 tons in 1892 was due only to low prices and labor troubles; for the deposits are practically inexhaustible. In few sections of the United States are iron ores more widely distributed or more advantageously located, the Oswego works furnishing this metal to Oregon and California foundries for more than a score of years. Copper ores are plentiful and rich, though as yet but little utilized.

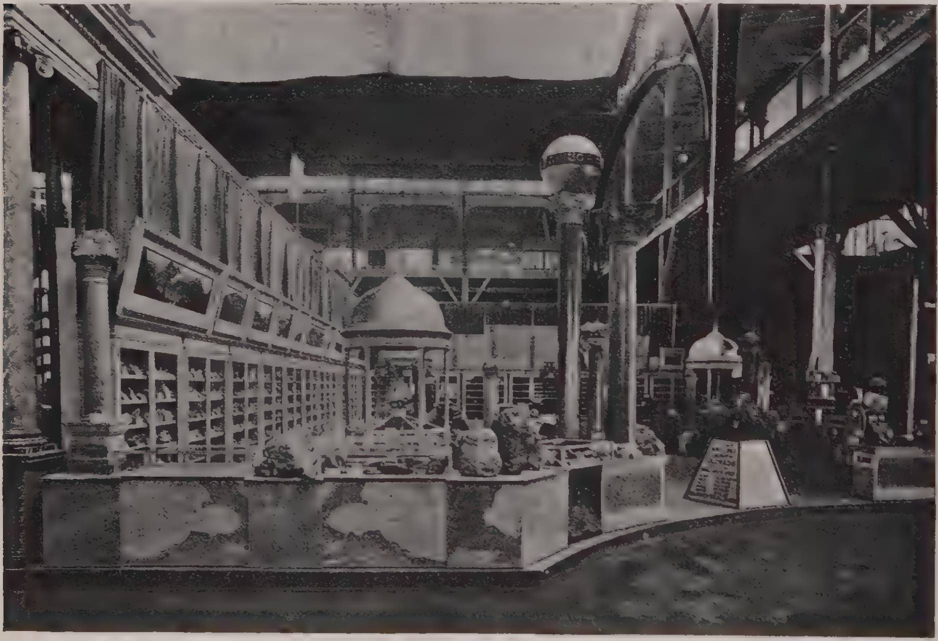


COLORADO EXHIBIT

Of nickel there is in Douglas county one of the largest mines in the world, rivalling the famous deposit in the Sudbury district, in the Canadian province of Ontario. Platinum and iridium are found in connection with placer gold; cinnabar exists in several districts, and with marble, granite, and other building stones, few of the Pacific states are better supplied.

In Washington's tasteful pavilion of terra cotta are 150 tons of mineral samples, gathered from every mine at which samples could be obtained. Among them are gold, silver, iron, lead, and copper ores; with coal, granite, marble, and onyx; sands and clays; bricks, tiles, and terra cotta; thus representing the principal mining resources and industries of this young and ambitious commonwealth. Here also, or in the state pavilion, are reproduced in models or in graphic art several of the more prominent mines, with the mountains and ravines in which they were discovered, with assays, statistics, and other information conveyed in attractive form. In the centre is a monument composed of gold, silver, lead, and copper ores, the shaft entirely of silver specimens, and around it groups of minerals in various designs. Near by is an ornate structure of similar materials, with a large mass of magnetic ore. The entire display is a credit to the evergreen state, which, to add to its attractions, purchased a number of gold nuggets, and even constructed roads to remote districts where contributions had been promised.

In comparison with other metals and minerals, Washington's yield of gold and silver is inconsiderable, the latter amounting for 1891 to less than $600,000. During the régime of the Hudson's Bay company coal was discovered in the Cowlitz valley. In 1852 deposits were found on Bellingham bay, and between 1860 and 1879 produced at the rate of 13,000 tons a year. Meanwhile more valuable beds had been disclosed, and the total output gradually increased to its maximum of 1,264,000 tons in 1890, the yield for 1892 being estimated at 900,000 tons. The entire area of coal lands has been stated at 180,000 acres, most of it within 40 miles of tide water, a single company owning claims on the Squak river two miles in length, with veins occurring at intervals from five to twelve feet in thickness, and said to contain 10,000,000 tons of merchantable coal. Bog-iron ore is abundant, and in Iron mountain, near the Snoqualmie pass, are veins of magnetite from 50 to 150 feet in thickness. On Kettle river are copper ores assaying from 50 to 75 per cent, all these and other resources as yet almost untouched.



COLORADO'S PAVILION

Turning to the adjacent state of Idaho, we find that her yield of the precious metals was estimated for 1892 at 90,000 ounces of gold and 3,250,000 of silver, the latter the smallest output in several years, due to extreme depression in prices, and to labor troubles in Cœur d' Alène, the principal argentiferous district. From the low-grade galena ores of this district, occurring in veins of considerable width, and with no indications of failure as depth is attained, were extracted in 1891 nearly 2,000,000 ounces of silver, and

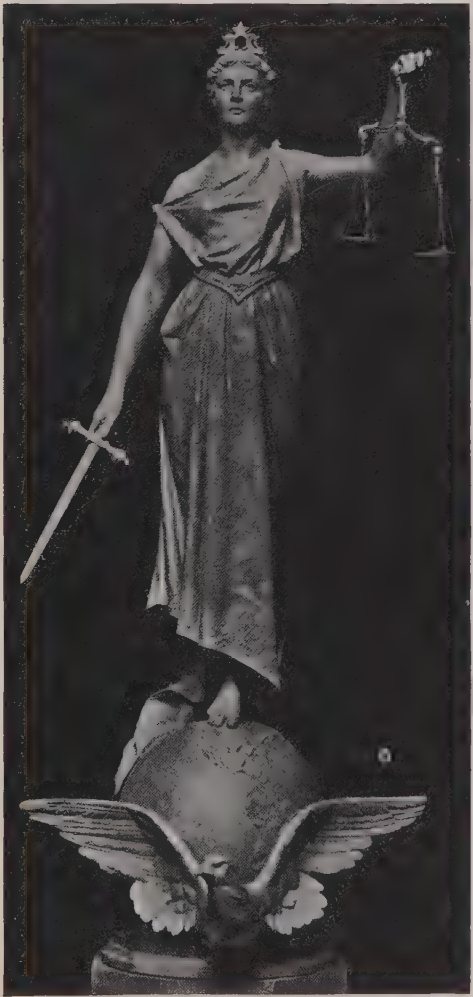
NEW MEXICAN MODELS

66,000,000 pounds of lead, Idaho ranking next to Colorado in production of the latter. Says one who has made a careful study of her mines: "Cœur d' Alène is most favorably situated for producing lead, the silver being almost a by-product. The ore is cheaply worked, and numerous streams afford ample water power. These mines can be operated at a profit with the price of white metal so low that others are compelled to shut down."

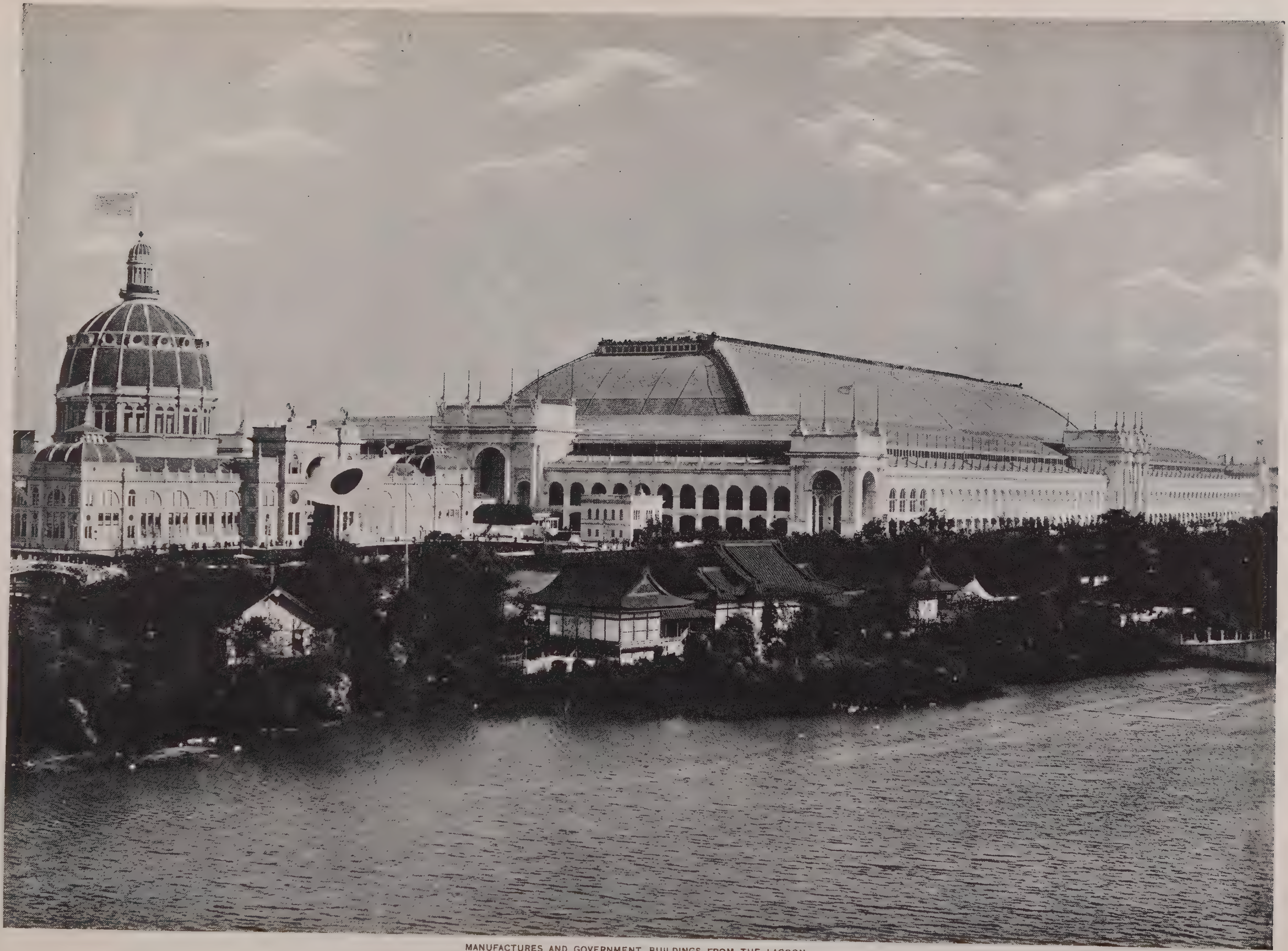
Apart from the precious metals, Idaho has an abundance of coal, iron, copper, sulphur, and salt. From the Narragansett mine in Owyhee county iron ores have been taken so rich in metal as to be cast into dies for stamp-mills, and elsewhere are veins which yield from 50 to 60 per cent, while the copper ores of the Bear lake district assay as high as 75 per cent. Near Soda springs is an immense deposit of sulphur, much of it containing 70 to 80 per cent of mineral, and at the Oneida salt works a marketable quality of salt is produced by simply boiling the water of springs in galvanized iron vessels. In northern Idaho there are mica, marble, granite, and sandstone, and almost throughout the entire country metals and minerals of economic value are widely distributed.

First among the hundreds of exhibits contained in Idaho's classic pavilion, colored in white and gold, may be mentioned that of the state, including, among others, samples of gold, silver, and copper ores, cinnabar, building stones, and clays, quartz crystals, sapphires, amethysts, and ruby sands. From nearly all the more prominent mines contributions were secured, each county being thoroughly canvassed, and with the result that nearly 2,000 samples were forwarded to Jackson park in several car-loads. Not a few of these are contained in the 2,500 cabinet specimens, selected by an expert, who also states the name of the mine and its owner, the assay value of the ores, the depth at which they were obtained, and other information of interest to mining men.

Gold and silver are freely displayed in the Idaho section; the former in the shape of nuggets from private cabinets, some of them found in the placers worked in pioneer days. Of wire silver there are beautiful specimens, delicate threads of pure silver, resembling filigree work, clinging tenaciously to bunches of galena ore. Among the exhibits are two rectangular blocks of what appears to be lead bullion, but is in fact galena ore, containing 75 per cent of lead, 15 of sulphur, and 130 ounces of silver to the ton. Of palladium ore there are samples from the Esmerelda mine in Lemhi county, where it is found in bunches yielding two or three ounces to the ton, in combination with free milling gold. This rare and valuable metal possesses the hardness of the finest steel, and is used, among other purposes, for astronomical, surveying, and electrical instruments, the main



MONTANA'S SILVER STATUE OF JUSTICE



MANUFACTURES AND GOVERNMENT BUILDINGS FROM THE LAGOON supply coming from South American countries.

Of pure aluminium there are samples extracted from the clay banks of Kootenai county, said to contain more than forty per cent of the metal. Among valuable stones are the onyx and opal, the latter found in a recently discovered mine on the banks of Snake river, and taken from matrices several inches in width. From Lewiston comes a specimen of rock almost unknown to scientists, of variegated tints somewhat resembling jasper, and one that will cut glass more readily than a diamond. Iron and copper ores are in liberal supply, and a large case is filled with samples of lead and copper concentrates; of granite, marble, and alabaster there are several exhibitors, and of asbestos there is a sample from Owyhee county, where a deposit was found in the autumn of 1892. Finally there is a large collection of mineral waters, in which, as in other resources, Idaho is especially rich, awaiting only the means of transportation for their fuller development.

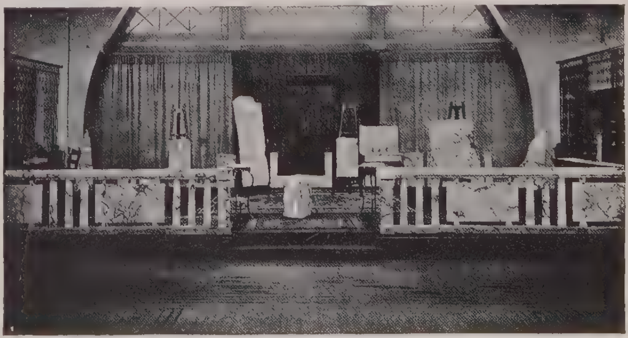
MONUMENT OF GERMANIA IN PORTLAND CEMENT, MANSKE EXHIBIT

Except for Alaska, whose yield of gold already exceeds $2,000,000 a year, and with one of the largest gold quartz mines in the United States—the Treadwell lode on Douglas island—with immense deposits of low grade but dividend paying ore, Nevada is the only section of the Pacific slope that is not represented among the main exhibits of the Mining department. And yet, not many years ago, Nevada was the largest silver producing region in the world, the bullion product of the Comstock mines alone amounting to $350,000,000, and for the single year of 1876, when the maximum was reached, to more than $70,000,000.

Utah has some 300 exhibits of gold, silver, silver-lead, copper, zinc, iron, and other ores, with building stones, coal, antimony, quicksilver, sulphur, salt, asbestos, and other metals and minerals, all neatly arranged and fairly representing the abundant mineral resources of the territory. In iron Utah is especially rich, with surface deposits in Iron county alone estimated at 50,000,000 tons, one of them a solid mass of magnetic ore, 1,000 feet long and half that width, from which analyses show from 60 to 65 per cent of metal.

Of the 163,000 tons of copper obtained from domestic ores in 1892, more than one-half came from Montana, whose yield for that year was 82,150 tons, against 53,700 tons for Michigan mines. Of this enormous output, the largest thus far on record for a single state, 50,000 tons came from the Anaconda company's works, whose property includes, besides the mine of that name, the St Lawrence and the so-called Chambers Syndicate mines. Of the precious metals Montana is also one of the largest producers, her yield of silver exceeded only by that of Colorado. Of gold, silver, lead, and copper her total output for the decade ending with 1890 was estimated at $250,000,000, of which more than two-thirds consisted of gold and silver. In that year was claimed for this state the largest gold mine, the largest silver mine, and the largest copper mine in the country, and in the following year the volume and value of mining products were the largest yet recorded.

Of the several hundreds of exhibits displayed in the Montana section, more than sixty consist of copper and silver-copper ores, both metal and mineral being displayed in every phase of production from sulphides



MEXICAN ONYX

and matte to sheet, tube, wire, and other manufactured forms. Of silver, gold, and silver-lead ores thousands of specimens are exhibited by more than 400 contributors. There is also the largest collection of nuggets contained in the Mining hall, one of them weighing nearly 48 ounces, and with 96 per cent of pure gold. Near it is a display of gold crystals, sapphires, and garnets from El Dorado bar on the Missouri, and within a few miles of Helena, and in another case are trays of gold-dust from the placers, each one holding about $1,800 worth of metal. Of coal there are many samples, and the building and other stones and minerals of economic value include granite, marble, porphyry, limestone, clays, gypsum, sulphur, graphite, and asbestos.

FOREGROUND OF THE STUMM EXHIBIT

The state has a large and valuable collection, among which are silver, silver-lead and iron ores, and surface copper; marble and other building stones; yellow and red ochre, manganese, malachite, chrysolite, tourmaline, dendrites, stalactites, rhyolite, rose and agatized quartz, garnets, jasper, and chalcedony. In a tin brick weighing some thirteen pounds, made by the students of the college of Montana, is represented the yield of that metal for 1892. Another curiosity is an old wooden cam which did service in 1864 at a four-stamp mill on Grasshopper creek, in the Bannack district, where two years before were discovered its placers and quartz ledges.

But the centre of attraction in Montana's beautiful pavilion, at the entrance of which stands a case of specimens from the Elkhorn district, is the statue of Justice, fashioned of native silver, and with orthodox scales and sword. In this statue, placed under a canopy of maroon velvet, in the centre of the pavilion, and guarded by two bronze lions, was used nearly a ton of sterling silver, the figure resting on a silver globe, beneath which is an eagle with outstretched wings. The lower portion of the pedestal is of ebony, and upon this is a plinth of pure gold, more than two feet square, and representing, as is said, a value of $250,000. The model selected for this, the largest silver statue in the world, was the actress Ada Rehan, whose stately and opulent form is cast in heroic mold. Behind the statue is a structure fashioned of copper bars; on the walls the more prominent mining centres are reproduced in photographs, and at the back a painting, named A Good Strike, represents the scene which its title indicates.

Colorado is well represented, as befits a state which in 1892 produced $5,500,000 in gold and more than $30,000,000 in silver, taking the lead of all other sections in her output of the precious metals. Of coal the production increased from 4,500 tons in 1870 to 3,800,000 tons in 1892; of iron the yield for the latter year was 32,000 tons; of lead, 61,000, and of copper 3,600 tons. Add to this her wealth of building and other valuable stones, her carnelian, chalcedony, onyx, jasper, jet, and agate; her petroleum deposits, almost rivalling those of Pennsylvania, and already producing at the rate of several millions of gallons a year, and it will be seen that Colorado is not wanting in mineral resources.

The section allotted the centennial state, adjacent to the southern portal of the building, is faced along the aisles with marble, and on either side of the main entrance are polished granite pillars with capitals of red sandstone. Within is a circle of columns fashioned of various building stones, and a pillar of granite surmounted by a globe, and a massive coal trophy, eight feet square at the base and twenty-four in height, dominate the entire display. Two sides of the structure are lined with cases filled with specimens of ore, and masses of gold and silver bearing quartz are grouped along the aisles, while in the centre, wire, nugget, placer, and other forms of gold from the Breckenridge district are freely displayed, together with gold and silver roses from a Denver exhibitor.

Among the many thousands of cabinet specimens contained in this collection, including those in the gallery, a large proportion was furnished by the state school of mines at Golden, and from the Colorado scientific society are samples of eruptive rocks and meteorite, forming together a most valuable and comprehensive assortment. From the more valuable mines there are also contributions, and from business, manufacturing, and other firms and companies are exhibits of coal, coke, iron, marble, building stone, slate, clay, asphaltum, petroleum, mineral waters, and other products, together with smelting and refining processes. Above the cabinets are photographs of the principal mining regions, and of buildings fashioned of Colorado stone, while in map form are depictured the geological and topographical features of the state.

GERMAN WIRE CABLE

From Aspen come samples of silver ore that average from 70 to as much as 20,000 ounces to the ton, the latter rather an exhibit of metal than of metal bearing rock. From Leadville are also some high grade specimens from the Chyrsolite mine, especially of bromo-chlorides; Forest city sends carbonates that assay 2,500 ounces, and the Lion mine carbonate ores almost as valuable. Of auriferous ores there is also a large collection, including ore from the Elkton mine containing more than $7,000 to the ton in free gold; from the Blue Bird mine telluride which yields up to $1,200 a ton, and others whose average varies from $7 or $8 to $1,100. Of turquoise there are beautiful specimens from the Blue Gem mine at Villa grove, and in a word nearly all the minerals of economic value contained in the centennial state are here on exposition.

Arizona's exhibits, adjoining the Colorado section, are displayed to excellent advantage on a raised platform, in the centre of which is a monument of copper ore, in rich colors of blue and green, one of the specimens of which it is composed weighing nearly 7,000 pounds, and the smallest exceeding 800 pounds. Around it are cases of cuprite, azurite, malachite, and other minerals of brilliant hue, some of the samples from the Holbrook mine, where is a cave of stalactite, being covered with incrustations of silver. In blocks of ore assaying from 30 to 70 per cent are represented all the more prominent copper mines of Arizona, whose total yield for 1892 was estimated at 19,000 tons. The metal itself is shown in the form of bricks, bars, sheets, rolls, plates, wires, and all other forms in which it is manufactured, and from one of the exhibiting companies are models of its mines and apparatus.

Of gold and silver ores and ores of silver and lead there are nearly 100 exhibitors, one piece of gold ore assaying a dollar to the pound; and from Cochise county, which furnishes the bulk of the collection, are a few gold nuggets, and a sample of onyx nearly eight feet long by two in width; while Mohave county, which is also well represented, presents specimens of agate and silver glance or sulphurets. Sandstone of finest grain is shown in the form of slabs and pillars, and there are portions of petrified trees, some of them beautifully polished.

Almost in the centre of New Mexico's section is a structure composed entirely of native ores in the form of a miner's cabin, and near it are relief models of several prominent mines. Beyond are pictures of the typical miner in orthodox costume, and with his patient and long-suffering burro. Here and in the western galleries is a large collection of minerals, including all the varieties discovered since, in 1832, were extracted from the so-called old placers a few thousand dollars worth of gold. Nearly all the metals common to the Pacific slope are contained in these sections, the greater number of the exhibits consisting of gold, silver, silver-lead, and copper ores; while coal is represented in the form of a pyramid, its materials furnished by the Madrid mines, the property of a railway company.

Coal is the feature in Wyoming's exhibit, representing an industry whose output for 1892 was 94,000 tons. Iron and copper are widely distributed; but neither have been as yet extensively worked, though in Albany county is a mountain of ferruginous rock assaying as high as 80 per cent of metal. Petroleum is found near the surface in many localities; near Laramie is a large deposit of mica; building stone is abundant; agates, amethysts, and other valuable stones have been found in the valley of the Sweetwater river; plumbago and graphite, soda, sulphur, asphaltum, and asbestos are among Wyoming's minerals, and the precious metals are found in many portions of the state. All these are represented in her pavilion, in which the central point of interest is a shaft of coal from the Black hills mines, most of the material furnished by the Union Pacific Coal company's works at Rock springs. The Wyoming Railway and Iron company has a large collection of ores; asphaltum is freely displayed, and in glass tubes are the various grades of petroleum manufactured by the Black Hills Oil company.

In addition to those already mentioned, California, New Mexico, Nevada, and Colorado have exhibits in the northwestern galleries, consisting principally of cabinet specimens, covering the entire field of their mineral wealth. Nevada, to which no space was allotted on the ground floor, occupies the largest area, the White Pine district making an elaborate display. In quartz crystals and ornamental stones the collection is especially rich. The Gunnison region of Colorado sends many specimens; but the feature in this section is the heroic figure of the Silver Queen of the World, seated in a triumphal car of silver, the canopy overhead and the foundation upon which it rests being richly encrusted with powdered crystals. This foundation serves as the entablature of several marble pillars, those at the main entrance being arranged in pairs. Cupids precede the chariot, scattering as they run disks of gold and silver, each piece as it falls from their cornucopias displaying the watchword, Free Coinage. Beneath their feet and upon the front of the structure are skilfully fashioned in mineral substances the words, Aspen, Colorado; and specimens of ores and gems are tastefully displayed.

ENTRANCE TO ONTARIO EXHIBIT

First among the exhibits of foreign participants may be mentioned Germany's elaborate display, one in which are fully illustrated the mining and metallurgical industries of an empire which ranks first among the continental nations of Europe, her volume and value of production exceeded only by that of England and the United States. Of gold and silver extracted from native ores the yield is inconsiderable; but from imported ores there were produced in 1890 several thousand pounds' weight of gold, and of silver, in connection with the smelting of lead and copper, more than 400 tons. Of coal the German output for 1892 was 71,000,000

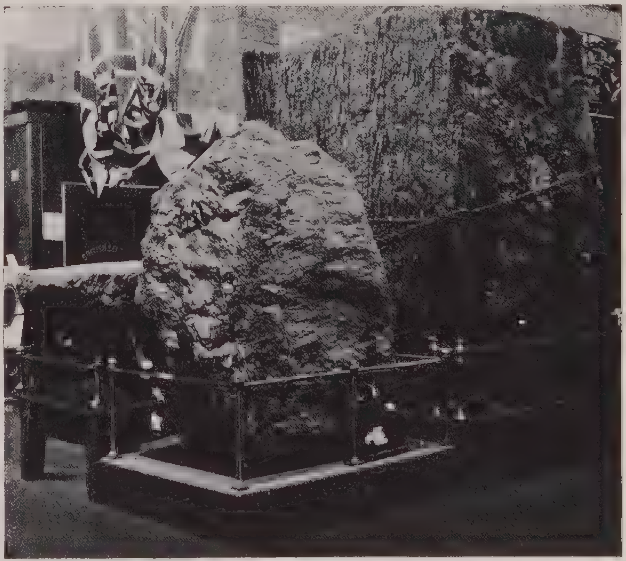
CANADIAN NICKEL ORE

tons; of pig iron, 4,900,000 tons; of sulphur and sulphuric acid, 437,000; of zinc, 140,000; of lead, 98,000, and of copper, 25,000 tons; these representing the principal economic minerals whose product was valued for that year at about $225,000,000. Copper is largely imported, the only important deposit being a vein of cupriferous schist in the Mansfield mines, of inferior quality, but largely utilized through elaborate mining processes; for the Germans have no superiors as metallurgists, the inception of this science dating far back to the prehistoric era of the fatherland, and in the middle ages attaining a higher development than elsewhere in the world.

The German exhibits are divided between the ground and gallery floors, the latter containing chiefly such as pertain to metallurgy and mining processes and apparatus. A considerable portion of the ground floor space is occupied by the Stumm pavilion, at the entrance of which is a massive iron gateway, surmounted by the heroic figure of a blacksmith, with fire-breathing dragons at his feet. Within is a large metal basin, on which are the brawny figures of workers in iron, assisted by sturdy lads, one of whom is helping to grasp with his tongs a bar just issuing from the roller, while the other is pushing a cart filled with molten ore. Above this group is a bust of Baron Stumm, the founder of the works from which it came, the Vereinigte Eisenwerke of Neunkirchen, one of the largest of Prussian foundries, employing several thousand hands, and producing an enormous quantity of manufactured iron. Among its exhibits, which form one of the most imposing collections in the hall of Mining, is a portico of cast iron pipes, flanked by obelisks of rolled and forged iron, the metal being displayed in many structural forms, including coils of wire towering like some huge tropical plant, almost to the roof of the building. In the background is a terrace of rails, and above it a cold-bent specimen, stretching in serpentine form along the rear walls. Here also is reproduced the iron superstructure of the Gotthard railway station, and near by are models of the mills and the dwellings occupied by mechanics.

MICA AND LIME

Near the southern portal of the hall, not far from the Colorado section, is an imposing structure composed of seamless steel tubes, erected by the Mannesmann works of Berlin. The exhibit consists of tubing for boilers and pipe lines, whether for oil, gas, water or steam, and hollow tapered poles for telephone, telegraph, electric light, and electric railway purposes. The special feature in these articles is that all are rolled from solid blocks by a patented spiral process, which causes the fibres to twist into a rope-like and extremely tough material.



BRITAIN'S TROPHY OF COAL

Elsewhere in Germany's section are specimens from her quarries and coal mines, with coal tar, oils, and paraffine, graphite and its products, and ornamental specimens of zinc. A Heidelberg firm has erected an elaborate structure composed of cement and gravel, though seemingly fashioned of limestone of a bluish tint. At the entrance is an archway with female figures in classic pose. Of cements there are several exhibits, and in the display of a Berlin laboratory are machines and apparatus for comparative tests of this compound, especially of the Portland variety, the experiments conducted in accordance with regulations framed by the government. By the Lehrte and Misburg firm of Manske and company was erected, near the live-stock pavilion, a portal of artificial sandstone, on which is a heroic statue of Germania, its flooring and stairway made of slabs of cement, and with piles of casks containing the manufactured article.

In the gallery the German division is in compartments, in one of which is a tall gilded shaft, its face representing in sections the relative yield of mineral products. Amber is freely displayed, and in many of the specimens are imbedded various forms of insect life. Other attractions are a tower of iron ores, a model of the Royal Prussian salt-works, and a scientific collection of crystals, with models of crystalline forms, showing geometric figures in different minerals and their interior lines of contact. But the feature of the gallery groups is the models of mines, illustrative of processes and apparatus, and especially of coal mines, by which are produced so large a proportion of the mineral wealth of the empire. The last are contained in the general exhibit of Prussian mining, some of them showing the method of wetting the face of the works so as to prevent the spread of fire-damp. Here also is shown a coal dressing plant at the royal mines at Saarbrück, with a drift run in the König colliery to test the use of explosives in the presence of fire-damp.

UNITED STATES SECTION—MEXICAN AND GERMAN EXHIBITS TO THE LEFT

Coal and iron are the principal mining products of the British isles, the value of the former being more than six times that of the latter even in metallic form, while the annual yield of pig and bar iron represents nearly 90 per cent of the total value of all metals produced from native ores. In 1891 there were extracted 185,000,000 tons of coal, worth $350,000,000, and giving employment directly to 650,000 miners and laborers; of iron ore nearly 13,000,000 tons were worked into $58,000,000 worth of metal; of lead the output was 32,000 tons; of tin and zinc, each about 9,000, and of copper only 700 tons. The last of these metals is now almost entirely imported, its production steadily decreasing since 1855, in which year the production was 21,000 tons. Meanwhile the steadily increasing yield of the United States, Chile, Australia, and other countries had diminished the price by nearly 60 per cent; this, with the gradual exhaustion of the larger deposits, causing a virtual cessation of copper mining in Great Britain. Of iron the production also shows a decrease of about 20 per cent within the last fifteen years, and with a more serious decline in value. Of non-metallic minerals apart from coal, and consisting mainly of building and other stones, clays, gypsum, salt, and oil shale, the yield may be estimated at $70,000,000, and the entire mineral yield of Great Britain is not far short of $450,000,000. Silver, found in combination with lead ores, is produced at the rate of 200,000 or 300,000 ounces a year, and of gold a few hundred ounces have been taken from low grade deposits in Wales, while from a mine in Wicklow county, Ireland, have come a few ounces, costing perhaps fifty times their value to extract.

PRINCIPAL ENTRANCE TO SECTION OF NEW SOUTH WALES

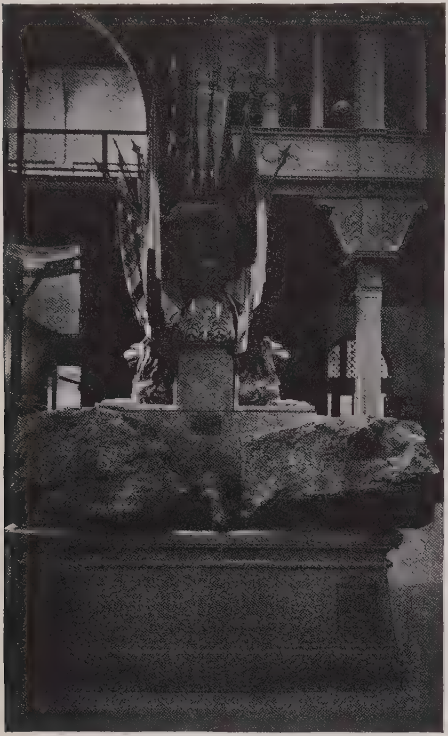
First among the British exhibits may be mentioned the large collections of minerals, somewhat too widely scattered around the pavilion, but representing together all the minerals of economic value found in the United Kingdom. Among them are many specimens of interest to the scientist, as of the blue-ball clays used for a century or more in the manufacture of the finest descriptions of earthenware; flint and flint implements such as Britain has produced from time immemorial, jet from jet shale in Yorkshire beds, and auriferous quartz with its encasing rock from North Wales. The processes of smelting lead and copper ores are shown in samples from metallurgical works, the former both by reverberatory and blast furnace methods, and the metallurgy of nickel is displayed in samples from a Birmingham establishment, while Sheffield and Bradford firms show how steel and iron are wrought into various forms.

Among the blocks of coal is one second only to the Washington specimen, contained in her state pavilion and presently to be described, the former weighing more than 28,000 pounds and containing 350 cubic feet. Of building and ornamental stones there are slate and granite, the latter in many shapes, as polished columns, monuments, crosses, and concrete paving blocks, with porphyry from ancient Egyptian quarries worked by a London firm as concessionaires. Another group consists of Portland and other cements, limestone, and artificial stones. Fire clays and fire bricks are freely exhibited, as also are kaolin and fuller's earth in its crude and manufactured state. Iron, copper, lead, cobalt, antimony, manganese are among the samples in the collections above referred to, and elsewhere are salt in display and decorative forms, and an assortment of grinding, abrading, and polishing substances and apparatus. While in some respects a creditable exhibit, the British section does not worthily represent the great variety and volume of the mineral products of that country.

To much better advantage appears the dominion of Canada, in her ample space to the north of the British division, and extending thence beneath the gallery floor. First among the exhibits may be mentioned the collections of the Geological and Natural History survey at Ottawa, and of the several provincial governments, including British Columbia and the Northwest territories. In these are included all the economic minerals contained in the dominion, some of them here for the first time placed on exposition. From the Sudbury district in Ontario comes an ingot of pure nickel weighing 4,500 pounds, with ores and mattes sufficient to give color to the superintendent's opinion that nickel will take the place of tin in the manufacture of household utensils. The ores are mainly of the pyrrhotite description, and of these there are samples from other Ontario mines. Of gold and gold bearing rock the

MINERAL MONUMENTS OF AUSTRALIA

province sends many specimens, most of them from her government collection, and of native silver, silver ores, and argentiferous galenas the exhibits are almost as numerous. Of platinum there is a small display, and of antimony a single specimen from a vein where it is found in combination with silver, lead, and sulphur. There is zinc blende from the Thunder Bay district on the northern shore of Lake Superior. Iron in the form of magnetites, hematites, bog-iron, and magnetic iron sand comes from several score of deposits.


IN THE FRENCH SECTION

Copper and copper ores and pyrites are in plentiful supply, the largest mass being of copper-nickel ore, weighing 12,000 pounds, and forming, with other blocks of copper and nickel bearing rock, a trophy display from the Canadian Copper company. There is a profusion of building and ornamental stones, of clays, marls, and kaolin; of graphite, steatite, actinolite, and molybdenite; with salt, gypsum, quicklime, and hydraulic cement. Apatite, or phosphate of lime, is prominent among the group of fertilizing substances. The Imperial Oil company has a large assortment of petroleum and its products. Asbestos is a feature in the Ontario section, as also are the sheets of mica and the delicately tinted variety known as amber mica, of which there is a crystal weighing 400 pounds from the Godfrey mine in Frontenac county, where in the Sydenham district similar crystals have been found six feet in diameter and with a weight of several tons.

In the exhibits of other provinces those of Ontario are in a measure duplicated. Quebec's collection rivals that of the sister province, especially in the display of asbestos, mica, plumbago, phosphates, building stones, and iron ores, the last from the Canada Iron Furnace company of Montreal. Among New Brunswick specimens are red granite, freestone, and other building stones, with gypsum and plaster. In the Nova Scotia department are many samples of gold and gold-bearing ores, some of the latter assaying many thousand dollars to the ton. In the central court of the Canadian section is displayed in pyramids of gilded blocks the yield of gold in the several provinces since first it was discovered in British Columbia. Here is represented the output of that province, amounting since 1858 to more than $53,000,000, with a production since 1862 of about $9,000,000 from the Cambrian rock formations on the eastern coast of Nova Scotia, and smaller amounts from Quebec, Ontario, and the Northwest territories, the last producing only since 1889. In numerous samples Nova Scotia shows her wealth in coal, for here are some of the largest carboniferous deposits in the world, one of the mines running far under the bed of the Atlantic, and with seams of extraordinary richness. British Columbia and the Northwest have also many specimens of bituminous and anthracite coal, and from the latter are samples of coal tar, petroleum, clay, and building stone. Finally there are shown in topographical and geological charts, in sectional maps, in photographs and drawings, the locations of mineral regions, together with the more prominent mines, their workings and processes.

With all her wealth of resources, it is somewhat remarkable that Canada imports more largely than she produces of minerals and their manufactures. First on the list of her products is coal, of which 3,400,000 tons were extracted in 1891, and next in the order named, in relative value, are copper, gold, petroleum, asbestos, iron, and silver. For that year her mining output was estimated at $20,400,000, against $25,000,000 of imports, the latter mainly in the form of manufactured iron and steel, which alone amounted to $14,000,000. Ontario is especially rich in minerals; and here have been recently discovered immense deposits of nickel, especially in the Sudbury district, whence, though the ores are of low grade, yielding on an average less than three per cent, $2,700,000 worth of that metal were exported in 1891. Of iron, chiefly in the form of magnetites and hematites, and in quality equal to the best of Sweden, there are large and valuable strata. Coal is widely distributed throughout the dominion, the area of coal-bearing lands in the Northwest territories alone being estimated at 65,000 square miles.

From the far north let us turn to the great southern continent, where beneath the

METALS AND METAL WORK

Southern Cross is a land abounding in mineral resources. As in other departments of the Fair, New South Wales is the only Australian colony represented in the mining division, but in this section is fully illustrated the mineral wealth of a country which has thus far produced a larger amount of gold than all the United States. Since, in 1851, a luckless prospector, observing that the California placers were found amid geological formations closely resembling those which he had seen in Australia, and taking ship for that country straightway discovered gold, the southern continent has added more than $1,600,000,000 to the world's stock of the precious metals. Victoria is the largest producer, her total yield up to the close of 1892 being estimated at $1,300,000,000, and of the remainder nearly $200,000,000 is accredited to New South Wales, whose output gradually diminished from $56,000,000 for the decade ending with 1860, to less than half that amount for the ten years ending with 1890. The discovery of large silver deposits in the latter colony is of comparatively recent date, and yet from a single district were extracted in 1892 nearly $12,000,000 of that metal, with more than 40,000 tons of lead.

COAL AND COKE

By visitors of all nationalities it is conceded that the exhibits of New South Wales form one of the most interesting and comprehensive collections in the hall of Mining, far surpassing those of Great Britain and other countries whose appropriations were of much larger amount. In several thousand packages were forwarded hundreds of tons of specimens, consisting largely of gold in every conceivable form, but including also many samples of silver and silver ores, of coal, iron, copper, lead, antimony, bismuth, and cobalt, with building, ornamental and precious stones, mineral paints, petroleum, cement and lime, and diamond-bearing earth.

At the entrance of the pavilion, fronting on the central nave and north of the Canadian section, is a pillar of frosted silver from the Broken Hills Silver Mining company, whose veins bid fair to rival the far famed lodes of Potosí.[1] The shaft is festooned with garlands and surmounted by a figure of Atlas, supporting his customary burden, with masses of ore at its base, and on one side minor structures of copper, tin, antimony, and silver. From the government collection are silver ores and blocks, and in a nugget of virgin gold is represented $6,000 worth of that metal, with gold quartz assaying 258 ounces to the ton. To the exhibit of private stones there are contributions from several private collections, and of special value is the display of opals.

In the background of this section are inscribed on a lofty wall statistics as to the mineral yield of New South Wales. Here the visitor may learn that this colony has produced gold to the value of $187,000,000; silver and lead, $54,000,000; coal, $124,000,000; tin, $46,000,000; copper, $29,000,000; iron, $1,800,000; and petroleum and other mineral oils, $6,000,000. Add to these the value of other products of the mine, and we have a total yield of at least $500,000,000, for a country whose population in 1892 did not exceed 1,200,000 souls.

Beneath these figures are pillars of various minerals, one of them in the form of a vertical section of kerosene shale. Coal is liberally represented in columns, blocks, and smaller specimens, and in diagram form are shown the thickness of seams and geologic formations of the more prominent districts. Elsewhere are tin, copper, antimony, bismuth, mercury, and iron ores, some of them arranged in structural forms, with ingots and bars of tin and copper, and specimens of the tin-bearing granites of New South Wales, which closely resemble the Cornish formations on the southwestern coast of England, whence tin was extracted long before Boadicea did battle with the Roman legions. Building stones are freely displayed, as also are clays and bricks, and in the form of an entrance way are specimen blocks of colonial marble.

SPECIMEN OF DOMESTIC ORE

Though as a mining country France does not compare with Great Britain or Germany, her production of metals and minerals is very considerable, the yield for 1892 being valued at more than $90,000,000. Of coal the output for that year

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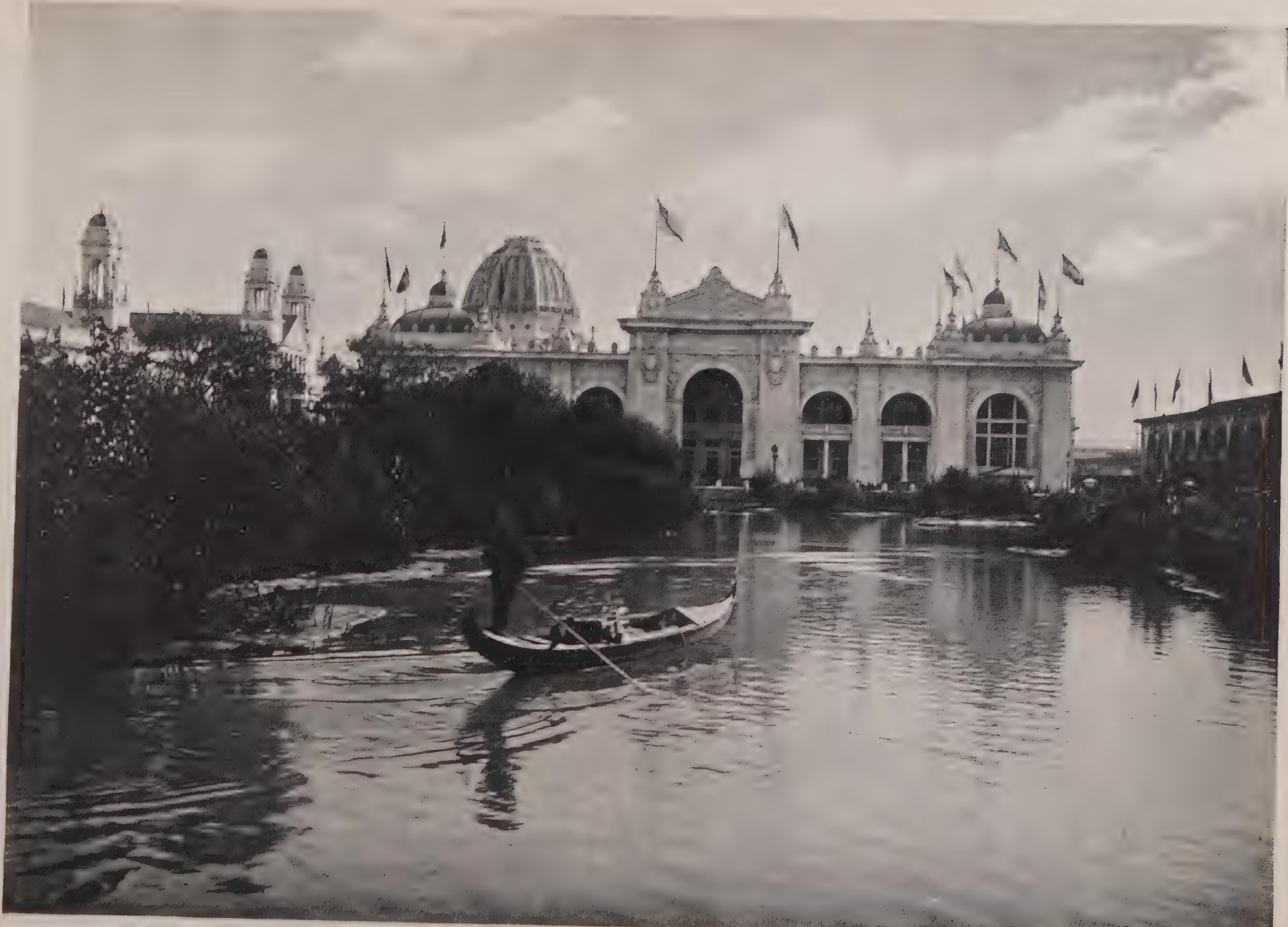
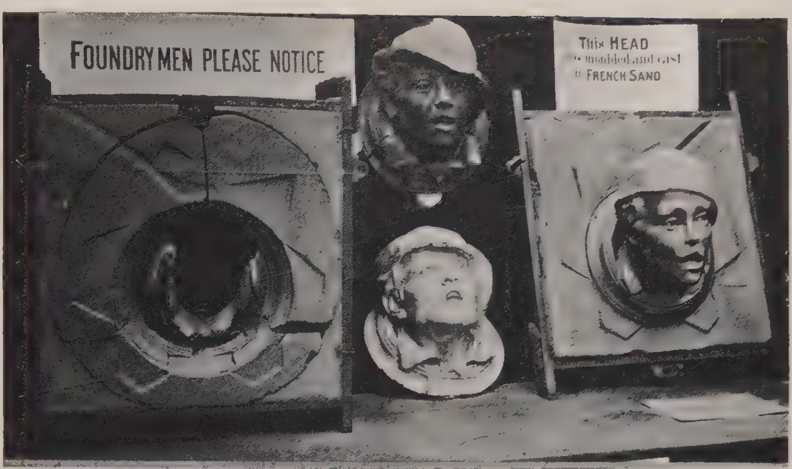
[1] Between May 1886 and May 1892 there were taken from the most productive of the Broken Hills mines 36,500,000 ounces of silver and 150,000 tons of lead, some of the ore assaying many thousands of dollars to the ton. Meanwhile more than $1,300 a share had been distributed as dividends and bonus on stock on which only $45 a share was paid up, thus giving a net return of over 3,000 per cent on the invested capital, probably the largest recorded in the history of silver mining.

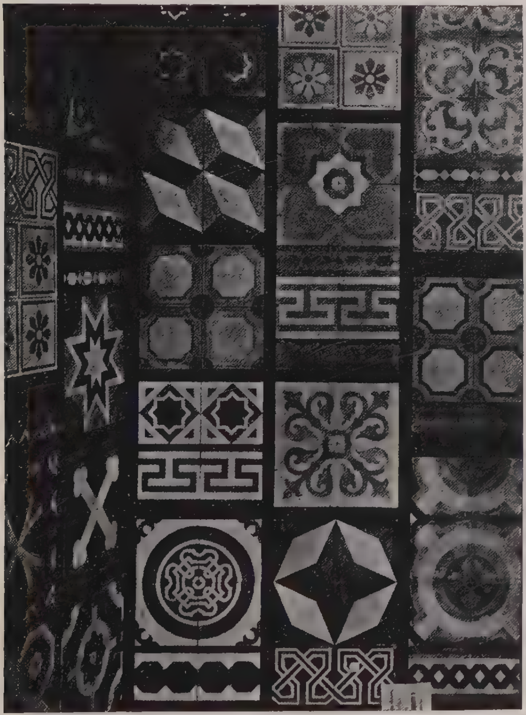


ALONG THE SOUTHERN SHORES OF THE WOODED ISLAND was estimated at 26,000,000 tons, and yet with imports of 10,000,000 tons, thus making an average consumption of nearly a ton a year per capita of her population. Of pig iron the annual product is about 2,000,000, and among other metals the largest yield is of zinc, lead, and copper, with a few kilogrammes of gold and a large amount of silver from imported ores.



MOULDINGS IN SAND. FRANCE

The French section is adjacent on the north to that of New South Wales; a feature of it is an exhibit from what is claimed to be the only mine in the world which produces pure carbonate of magnesia. Among the more artistic collections are bronzes, enameled tiles, and casts showing the quality of molding sands. Cement is largely represented; a Bordeaux mine-owner has a display of manganese, and a few samples of slate, coal, and patent fuels almost complete the list of what France has to show in the Mining hall in the way of native products. In common with Great Britain and some other foreign participants, France is not worthily represented in this department of the Fair, a large portion of her space being covered by a rustic pavilion, with a group of aquatic plants in the centre, affording a place of rest for weary sight-seers. From the Laurium mines in Greece, controlled by Frenchmen, are massive specimens of silver, lead, and zinc, and from New Caledonia a collection of nickel ores, chrome, and cobalt.



DESIGNS UPON ITALIAN TILES

In the Austrian section, west of the French pavilion, are several exhibits worthy of note. The mineral waters of Carlsbad are contained in vessels fashioned in the shape of a pavilion, which presents in dioramic form this noted resort, with the lofty mountains that surround it. On the outer walls are depicted in detail the hotels, drinking booths, and architectural features of the place. But it is in iron and steel that Austria makes the best display, noticeable among her exhibits being a hexagonal structure of crucible steel, known as the Poldi variety. The posts, eighteen feet in height, were hammered from ingots, a centre-piece and several cases within representing various commercial forms of the metal, with sections fractured to show the uniformity of the material. Another exhibitor advertises his scythes by cutting sheets of the lightest tissue paper with their keen edges, and on the wall of the aisle is a sheet of iron 160 feet long, a yard in width, and one-twelfth of an inch in thickness, said to be one of the largest plates ever rolled. This, as well as the Poldi steel, comes from Bohemia, whose metal-workers are almost as famous as those who produce the beautiful glass-ware displayed in the hall of Manufactures.

TILES FROM FRANCE

A feature in the Italian section adjacent to the Canadian groups is a translucent mound of alabaster, composed of blocks as taken from the quarries, side by side with which are beautiful statuettes and other sculptured forms. An admirable piece of work in their vicinity is the leaning tower of Pisa, cut from a block of alabaster extracted near that city. There are also many specimens of the famous marbles of Italy, including a large octagonal font, which for more than three centuries stood in the convent of Gesú e. Maria at Rome. This is made of the Claudian variety, one largely used by the Roman Catholic church, as in the cross on the "holy gate" of St Peters, and the consecrated stones of the altar. Sulphur from the Vesuvius and other districts is displayed in blocks and powders, with asphaltum, bitumen, and petroleum, also

GRECIAN EMERY PAVILION

from volcanic regions, and tiles of cement richly colored and ornamented with geometric designs.

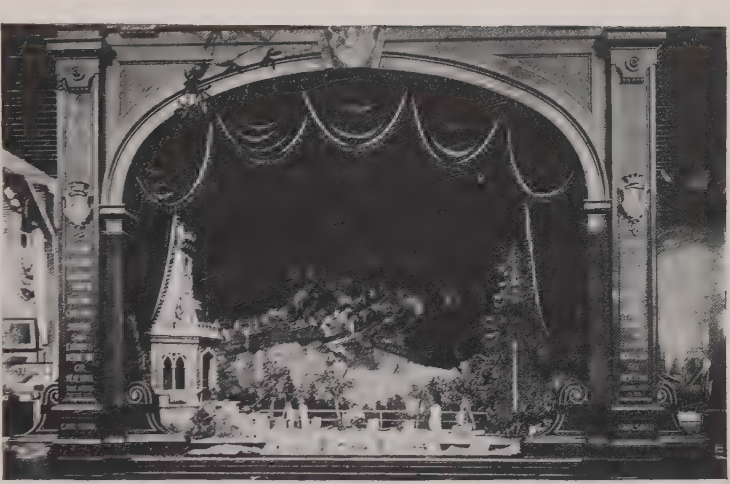
The Grecian section was originally allotted to the United States of Colombia, which accounts for its position among the Spanish and Latin-American exhibits. The display, although small, is suggestive, containing as it does contributions from the famous Laurium mines near Athens, whose treasures in the ancient days of her naval supremacy went far toward building her fleets and supporting her citizens in luxury. They are now controlled as I have said by a French company, which also exhibit brimstone and sulphur in ores and powders. Elsewhere are magnesite blocks, with emery and lead in crude and manufactured forms. Marbles from the classic isle of Scyros present a business-like aspect, as though advertising themselves, and an altar of Athenian marble is erected by the committee of Olympus, not in honor of the gods but of the Columbian Exposition.

In the western vestibule of the hall are three large gilded cubes, the inscriptions upon which inform us that since 1745, when Russian gold was first mined in commercial quantities, the empire has produced more than 1,800 tons of that metal, Siberia furnishing nearly three-fourths. South of this monument are shown in specimens and photographs the varied mineral resources of a domain which covers one-sixth of the entire land surface of the globe, one side being occupied with a row of cases in which are hundreds of bronze figures symbolic of civilization and barbarism. A shaggy-coated bear rears his unwieldy form beside the figure of a nobleman, and a gaunt wolf crouches near the feet of a richly attired lady. Horses, stags, and dogs, peasants and high officials, princes and Cossacks, with typical representatives of various classes are here reproduced in miniature. The iron works of the Ural and other noted districts have also contributed of their ores and first forms of manufacture, and a fine display is made of swords and cutlery, many of the articles with handles of skilful design and workmanship. Maps indicate the most promising and productive districts for gold, coal, petroleum, salt, iron, copper, and other minerals. There are also photographs of the more valuable mines of coal and rock salt, and near one of the entrances are massive specimens of the latter, in contrast with which blocks of black marble display their shining surfaces.

CRUCIBLES OF GRAPHITE

Adjacent to the Russian section on the north is the small space in which Japan reveals her mineral wealth, as yet but little developed. The entrance-ways are in rustic form, and within is a tastefully arranged, instructive, and unique exhibit. In the centre are ingeniously constructed models showing the cross sections of mines as worked in ancient and modern times. Front views are also given representing a dark cave which forms the inlet to the old mine, and an ornate pavilion through which one passes into the other. Japanese miners are shown in the narrowest of galleries, lying upon their backs or stomachs, working like slaves, and exposed to all the dangers of caves and explosions, while the tools and apparatus for extracting ore and pumping water are of the most primitive kind. As Japan has recently adopted modern machinery and methods of timbering, the interior view of the mine of to-day presents no remarkable features, the chief interest centring in the skilful workmanship of the model. Close at hand are specimens of coal and copper, silver and gold in the ore and leaf, antimony, commercial clays, variegated marble, graphite, sulphur, native and refined, and table salt in plain and ornamental forms, the first two articles representing an annual yield of about $10,000,000. Among the minerals displayed in manufactured forms are crucibles made of graphite. There are also photographs of some of the most productive mines, and maps showing the location of coal-fields and collieries, as well as the geological distribution of soils, while specimens of the soils themselves may also be examined, the entire exhibit being mainly organized by the mining and geological bureaus.

JAPANESE MARBLE



AN AUSTRIAN PAVILION

In the southwestern portion of the hall are the exhibits of Spain and Latin-American countries. The display made by the former consists of massive specimens of lead ore, with primary manufactures of lead, samples of copper, phosphates, salt, slate, marble, and many other minerals. There is also Cuban asphalt, which contains 70 per cent of bitumen, and is said to possess great commercial possibilities. Among the decorative features in the Spanish pavilion is a large array of mining tools, tastefully grouped at various points.

Elsewhere among these groups is sufficient evidence that the republican offspring of Spain are by no means lacking in enterprise. A pyramid in the centre of Brazil's pavilion represents the output in gold of the once famous Minas Geraes, which during the early part of the eighteenth century produced $700,000,000 of that metal. Around its base are several varieties of marble and granite, while in trophy and other forms the coal mines of Rio Grande do Sul illustrate the mineral wealth of the country. Mica, quartz, and asbestos are shown in many beautiful forms, together with lead and copper ores, and the display of gems, though brilliant, attracts less attention than a remarkable stone of elastic qualities, of which there are abundant deposits in the state of Minas Geraes.

ALABASTER STATUARY

The live-stock and agricultural interests of the Argentine Republic completely overshadow the mining industries, which thus far have not developed into commercial importance. In this department, however, the government bureau of mines and geology has tastefully decorated a large section in blue and white, installing therein specimens of marbles and other building stone, with clays and salts, iron and coal. The geological maps hung upon the walls indicate that the most promising mineral deposits are in the northwestern portions of the country, near the headwaters of the Negro and Colorado rivers.

ALABASTER STATUARY

Ecuador and Bolivia have but a miniature display, the former presenting a few specimens of gold among a miscellaneous collection, while the ancient glories of Potosí are but feebly represented in the tiny pavilion of the latter, her mines, which in the sixteenth century produced as much as $80,000,000 of silver a year being almost abandoned. The largest mines are now at Huanchaca, and are mainly controlled by Chilean capitalists; but their wealth finds little expression in the hall of Mining. Other exhibits are masses of crude rubber, a portrait of the president, and a large table made by a resident of Cuzco, who informs us that he is no cabinet maker but sends his handiwork, composed of the choicest varieties of native woods, as a contribution to the Fair.

Nitrate of soda forms the text of Chile's exposition. It is displayed in various shapes, a large model of the famous works at Rosario de Huara showing one of the largest establishments for its manufacture in the world. Upon a shaft within this section are statistics as to the growth of this industry from 1830, when only 800 tons of nitrate were exported, until, in 1890, exports had increased to more than 1,000,000 tons. Not only is this a most important source of individual wealth, but the national treasury derives therefrom an annual income of $20,000,000, or more than one-half of its revenue.

In Mexico nearly 4,000 mines are under regular exploitation, with others worked at intervals, and a vast number of abandoned claims, many of which if reöpened would yield excellent returns. While as a rule

PORTION OF MEXICAN SECTION

processes are somewhat primitive, modern appliances have been largely introduced among the more productive mines, and especially in those which have passed under foreign ownership. One advantage is the cheapness of labor, wages varying, according to the nature of the task, from 50 cents to $1.25 a day, the latter rate for the barrateros who extract the ore, sometimes receiving in addition a share of what they take out. Other fostering influences are the security for life and property established under the Diaz régime, and the building of railways, affording direct communication with the United States; for until recent years nearly all the heavier machinery was imported by way of Vera Cruz.

The history of mining in Mexico dates almost from the time of the Spanish conquest, and yet her deposits of the precious metals show no signs of exhaustion, the yield of those which have been abandoned being more than compensated by new discoveries. Between 1521 and 1891, a period of 370 years, the total production of silver has been estimated at $3,570,000,000, and of gold $277,000,000, while the present yield of both these metals may be stated at somewhat over $40,000,000 a year. Of coal the annual output is worth about $4,000,000; of copper, $2,500,000; and for other minerals, metals, and metalloids, including iron, sulphur, salt, mercury, clay, and ornamental and precious stones, may be added a value of $25,000,000, thus giving to her mining and mineral products a total valuation of more than $70,000,000.

To Mexico was allotted a liberal space in the southwestern section of the hall, her display far surpassing those of Spain and other Spanish-American countries. Here, as in the Manufactures building, an attractive feature is the collection of ornamental stones, and especially of onyx, and a newly discovered variety to which has been given the name of rose garnet. The latter is one of the most remarkable of minerals, combining some of the best qualities of ornamental and building stones, and the only deposit thus far discovered is at Zalostoc Morelos, within 100 miles from Mexico, near a line of railway, and in sufficient quantity to permit systematic development. It is, moreover, a merchantable stone, one which, though harder than granite, can be easily quarried, cut, and polished, and is not affected by the most violent changes of temperature. Technically it is described as a silicate of lime and alumina, and when worked into thin slabs and placed in a strong light, a beautiful color effect is produced, the garnets largely adding to its decorative qualities. Near

ROSE GARNETS

CAPE COLONY

the eastern entrance-way are pillars, slabs, and ornamental and geometric designs in rose garnet, while the rare beauty of its texture is further illustrated in a delicate plate of the mineral contained in an illuminating apparatus. Elsewhere the exhibits, selected with the utmost care through a commission appointed by the government, are for the most part arranged in cabinet form, many of them contained in handsome bronze show-cases. There is also a group of ore-washing apparatus, and viewed as a collective exposition of mining resources and industries, the entire display is one of which our sister republic has good reason to be proud.

Nowhere in the hall of Mining is there a more attractive spot than the Cape Colony section, south of the Brazilian exhibits; for here of an afternoon, between the hours of two and four, is shown the process of diamond washing from soil imported from the richest deposits of the Kimberley mines. To Americans this should be of special interest, for by the United States are purchased considerably more than one-half of the $20,000,000 worth of diamonds annually produced by this famous district, almost entirely by a single company, whose rate of production is thus restricted only to maintain the market value of its output.

The section is surrounded by a high partition, with plate-glass windows, within which the earth is scattered as found in the mines; but a better view of the processes of washing and cutting may be obtained from an elevated platform, to which a stairway leads from the ground floor. First of all the sand is washed away from the pebbles in a large pan or pulsator, and that which remains is placed in a cylinder, with spiral motion and apertures of various sizes, through which the pebbles are dropped into the sieves beneath. These operations are conducted by stalwart Zulus, attired in full dress Exposition costume—a cap and a pair of short trousers; for other garments they cannot be induced to wear. One of the Zulus stands guard at the gate, armed with a war club with massive ivory head. He is a chieftain of his tribe, a man of gigantic stature, and one of the impi which defeated the British troops in the days of King Cetshwayo.

CAPE COLONY DIAMOND MINES

The pebbles are handed to the sorter, who spreads them upon a table and searches for the diamonds, several valuable stones being taken at times from a single pan of earth. The rough diamonds are then delivered to manipulators for cutting and polishing, and are thus prepared for market, losing about half their weight through these processes, of which the latter is performed by a revolving plate making 2,000 revolutions to the minute. In a glass case are rough diamonds valued at $750,000, including all colors, forms, and degrees of crystallization, from deep brown to purest white, and with many intermediate shades, as blue, green, pink, and orange-yellow. There are also the black diamonds used for cutting, the hardest of all varieties, and such freaks of nature as the twin diamond, the latter exceedingly rare. Other exhibits from southern Africa are specimens of copper ore from Namaqualand; asbestos, whose fibres are of a bluish tint; and a cabinet of minerals collected in the region south of the Zambesi river.

A DIAMOND MINING DISPLAY

In the eastern sections of the hall, and extending into the area occupied by the states, is a large display of mining machinery of many patterns and many purposes. The most extensive exhibits are by Fraser and Chalmers, the Chicago Iron works, and the Gates manufactory, all of Chicago, the specimens from the first of these firms being among the most massive in the building. An imposing structure is the so-called Chilian mill for the crushing of gold and silver ore, its ponderous rollers, as they revolve upon their axis, having also a horizontal rotary motion within the huge metallic die. This is a sample of the score of such mills now in operation in Mexico and the United States, and its companions in this section are several huge quartz mills, a lead furnace, rollers for such fine work as the crushing of diamond bearing earth, and a large assortment of apparatus for the reduction and refining of copper ores. Of the latter mineral, there is a compartment filled with many beautiful specimens, the company also showing samples of a recently discovered alloy, known as ferro-alumina, which is claimed to be the strongest and hardest metallic substance known, and is specially valuable for such castings as the shoes and dies of stamp mills and rock crushers. In the section occupied by the Chicago Iron works are apparatus for crushing quartz, for smelting ores, and for hoisting and pumping, while across the aisle is a crushing plant, installed by the Gates company, including a leviathan rock breaker with a capacity of 150 tons an hour. In this section is also a model in operation, showing the processes of crushing, elevating, screening, and distributing stone used for paving or ballasting.

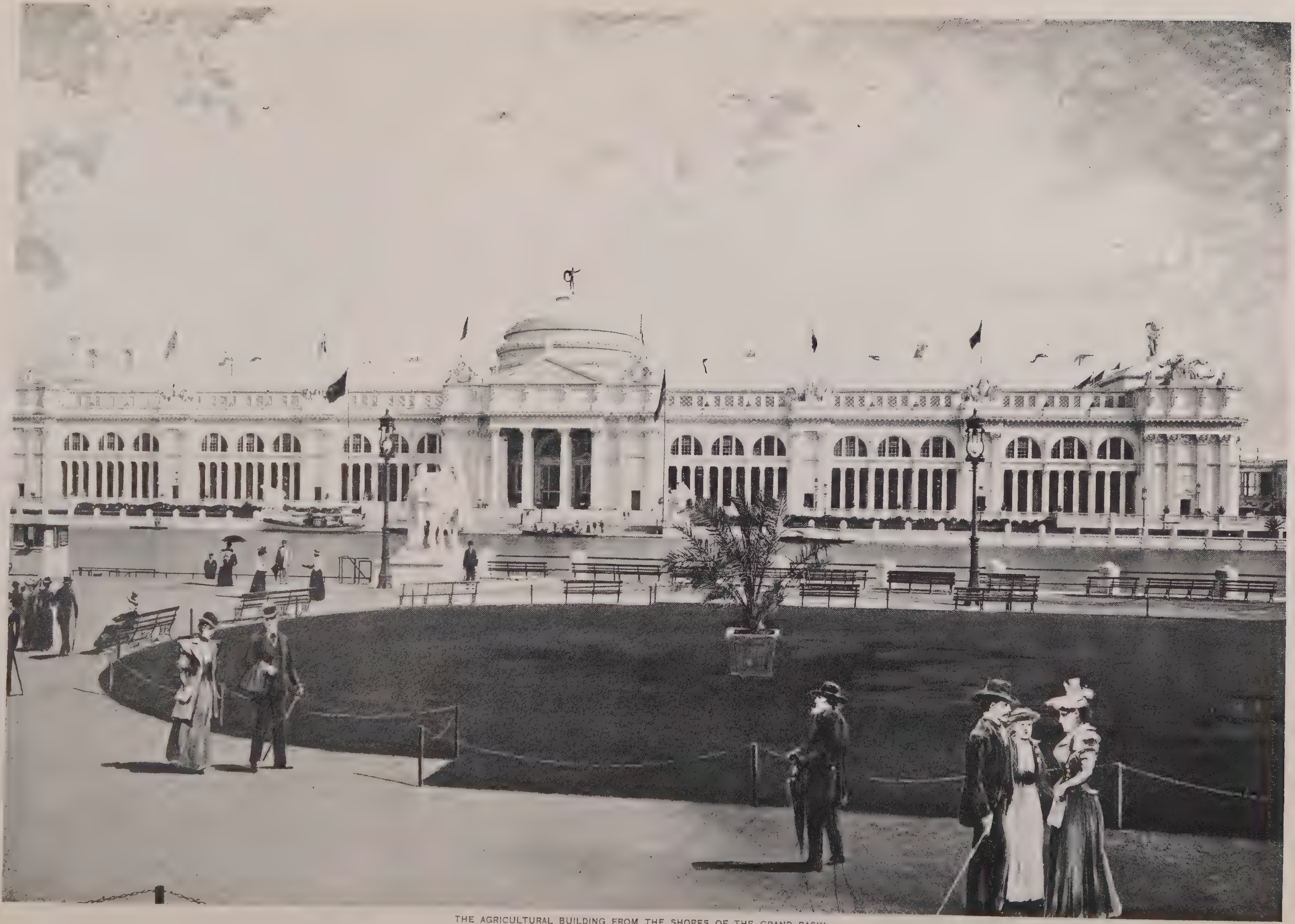
Elsewhere are various mills for the grinding of rocks, ores, and all other refractory materials, their chief distinction consisting of the various motions with which the rollers work in their dies. Many of the machines are arranged for either wet or dry grinding, some of them stationary, and others portable. There are also mills which serve both as pulverizers and separators, with apparatus specially designed for the preparation of paint materials.

The collection of drills is an interesting feature, the machines being of all sizes and makes, one of them for boring to a depth of a mile or more. Elsewhere is apparatus for sawing and polishing stone, contributors from the eastern and middle states being foremost in this display. Another group consists of chain belting and appliances for elevating and hauling minerals. Of this class the Jeffrey manufacturing company, of Columbus, Ohio, is a prominent exhibitor, its section containing, besides a large assortment of machinery, a model showing a section of a coal vein. Illustrating the method of moving ores and coal, is an underground haulage plant, in a tunnel beneath the southern portion of the building, composed of a wire-rope tramway, cars, and engine furnished by several companies. At the further end of the hall, on the ground floor, is a system of iron pipes, representing an invention whereby it is claimed great saving of time and money would result from conveying minerals in semi-liquid form from mine to market, pulverized, mixed with water, piped, and then, after reaching their destination, pressed into solid cakes.

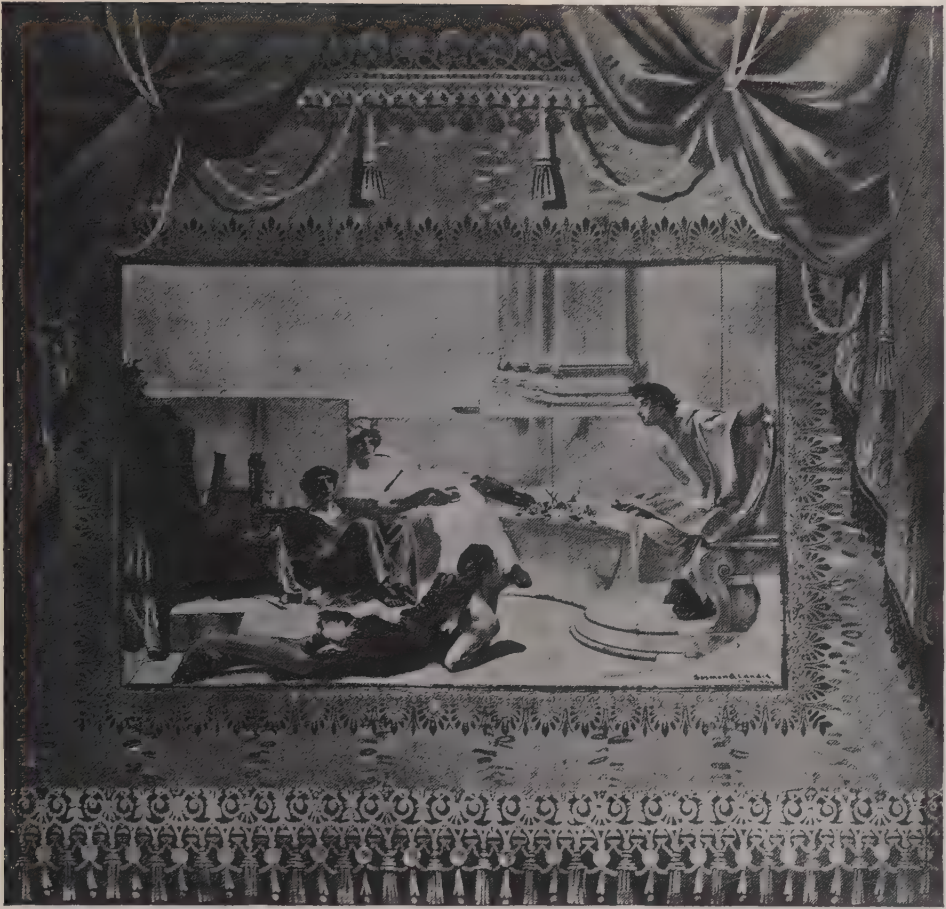
KIMBERLEY, SOUTH AFRICA, EXHIBIT

In the machinery department are also exhibits of metal manufactures. Ploughs, rails, fence-wire, and other forms of iron and steel are displayed by a Pennsylvania company, the key-stone state being further represented by two tasteful pavilions of sheet iron, one of them surmounted by a golden eagle. In the official classification these exhibits are grouped under the head of the metallurgy of iron and steel, while under the

GENERAL VIEW LAGOON



THE AGRICULTURAL BUILDING FROM THE SHORES OF THE GRAND BASIN



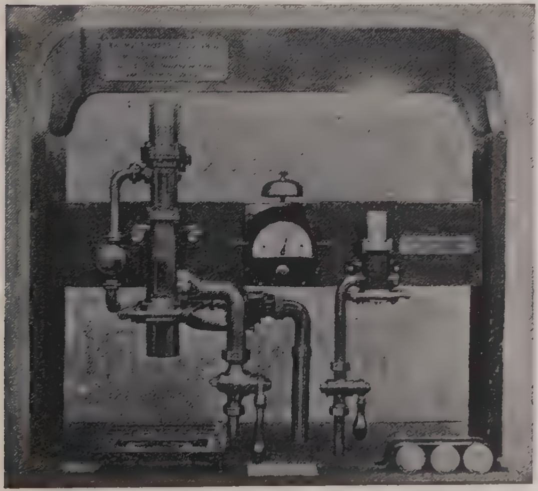
ASBESTOS THEATRE CURTAIN. SUBJECT: READING HOMER

class designated as copper and its alloys is the pavilion constructed of brass and copper tubes by Randolph and Clowes, of Waterbury, Connecticut. The latter stands at the eastern entrance to the building, across the hall being the golden trophy symbolic of Russia's mines, and between the two the great shaft of coal from Pennsylvania. Coal is also, as I have said, at the base of the monument in the northern end of the hall, representing the mineral production of the United States for each second of time, with asbestos at the apex of the structure. But among all the forms of mineral manufacture there are none more striking than those exhibited by the H. W. Johns Manufacturing company of New York. In a tasteful pavilion the firm has a display of raw asbestos, showing also their looms in operation, with felt in various shapes, a fireman clad in garments of asbestos, and a miniature theatre curtain of the same substance, one considered as nearly fire-proof as textile fabrics can be.

Near the German section, in the southwestern entresol, is the general exhibit of ores and other minerals, with an exposition of the modern processes by which the metals are extracted and transformed into commercial products. Along the central aisle, as a supplement to these object lessons, is a series of small transparencies, copies of cotemporaneous illustrations depicting the ancient and primitive workers in metals of all countries, with their rude apparatus and environment. The entire exhibit is the creation and special pride of the chief of the mining department.

In the copper and tin section are illustrated, by photographs and specimens, the dry and wet processes of reduction, the tin of South Dakota and the copper of Montana being plentifully displayed in their crude forms. A company whose specialty is the refining of copper also shows its method of decomposition by electro-medical agencies.

It is in this vicinity that Arthur C. Wendt, a New York engineer, shows the first of the many photographs which he has distributed almost throughout the entire department. Here are reproduced the works that he has erected at Antofagasta, Chile, for the crushing, smelting, and



SLUICE VALVES

ROLLS OF ASBESTOS FELTING

NEEDLE OF ANTHRACITE COAL, PENNSYLVANIA

refining of silver and copper. The Huancha company, by whom he was employed, is now one of the largest private producers of silver in the world, with a yield from its mines, since 1877, valued at more than $43,000,000. The plant at Antofagasta includes nearly 60 furnaces, of which two are for the refining of silver, with many huge copper pans and settling tanks.

Among these groups a New York firm presents a collection of rare coins, and of cruder forms of metals, with their alloys. Another New York company has a complete assortment of metallic nickel, salts, and alloys, while a Virginia factory shows artistic forms of zinc. Elsewhere, in photographs and models, the methods of extracting gold and silver by modern leaching processes are fully explained, the Russell company of Park City, Utah, making the largest and most interesting display. Its process is distinguished from the old leaching method by the use of bluestone in the hyposulphite solution, and of soda ash as a precipitant for lead. This may be applied to free and rebellious silver ores, and to silver-gold ores and tailings, either in the raw state or after roasting, and has been adopted by various mills in Mexico, Montana, Utah, and Colorado. Whatever its merits as compared with other processes, many expert metallurgists claim that the extraction of gold and silver by lixiviation, or leaching, will eventually supersede both the smelting of ores and the separation of the metals by amalgamation with the use of mercury as a dissolving agent.

Among the exhibits of antimony and mercury, the quicksilver of New Almaden, California, and cinnabar ores from the golden state form the basis of the collection, most of the remainder coming from eastern firms. In this class is included the new metal called electricon, displayed by a New York firm as an anti-friction compound. It is generally admitted, however, that aluminium in some form is the coming metal of the world, and to this has been allotted a liberal space side by side with the groups of iron and steel. Aluminium is shown in composition with iron, gold, ferro-manganese, tin, and copper,

GENERAL VIEW OF LAGOON

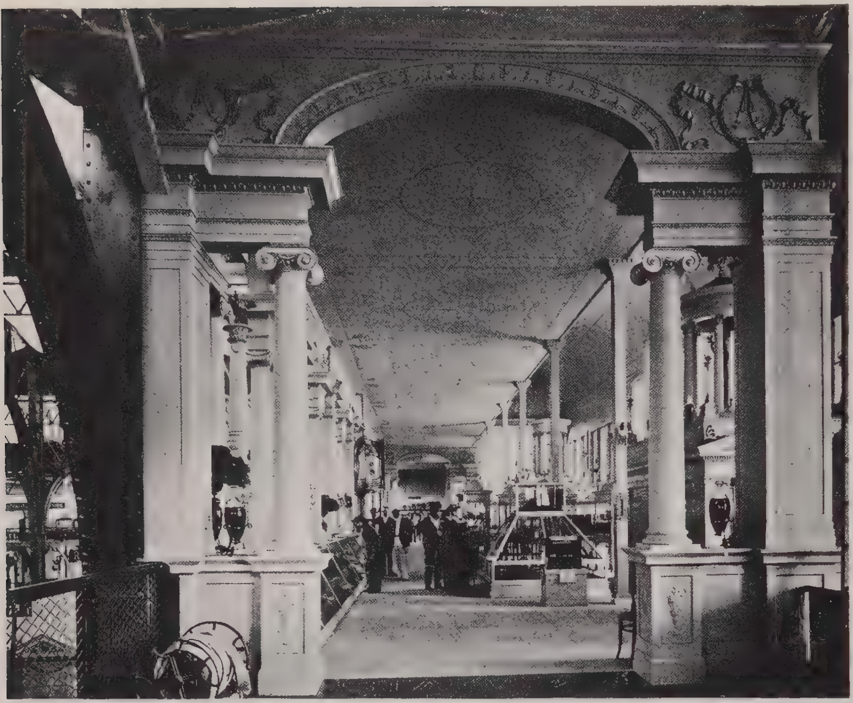
ON WOODED ISLAND

as well as in many manufactured products, a reduction company of Pittsburg, Pennsylvania, occupying the largest space in this section. There are several exhibits on the ground floor which illustrate the metallurgy of iron and steel, including those which show the methods of manufacturing crucible and open hearth steel, the different forms of sheet iron and steel, steel castings, and projectiles. In the gallery are more compact displays, explanatory of these and such other branches as the chemical process of puddling, with mineral wool in all forms, furnace slags, samples of welding, and specimens of tools whose heads are finely tempered.

Beyond the metallurgical department, in the south gallery, is a library containing publications of interest to the mineralogist, with a collection of photographs of eminent men in the domain of this practical science. Midway in this gallery is a large pavilion, in and around which American manufacturers of tin and terne display their wares; and in the southeastern corner are assaying and testing laboratories. A Pittsburg company shows chemical substances for the testing of minerals, and adjoining its compartment is that of a Chicago establishment, containing furnaces, blow-pipes, and other apparatus, in the operation of which heat plays the leading part.

SCENE ON THE BEACH

Except for a few mineral cabinets from the eastern states, and miscellaneous collections from California and New Mexico, the southeastern galleries are virtually monopolized by the exhibits of Ward's Natural Science institute of New York. To describe



DISPLAY OF STANDARD OIL COMPANY

this collection in detail would be simply to review the entire domain of geology, with its kindred department of mineralogy. There are several collections, however, of which special mention should be made. Besides many specimens of the precious metals, there is a case containing casts of gold nuggets which have become historic, the list including the Welcome nugget found at Ballarat, Victoria, in 1858, weighing more than 2,000 ounces, and valued at $41,000; the Viscount and the Viscountess Canterbury, both also from Victoria, unearthed in 1870, and valued respectively at $21,000 and $17,000; the Precious, discovered during the succeeding year in the same district, valued at $31,000; the gold nugget taken in 1842 from the Ural mountains, Siberia, weighing 100 pounds and worth $22,000, and the mass of platinum, weight 21 pounds, found there in 1827 and said to be the largest ever mined in a single piece. Another remarkable collection is contained in flat cases along the central aisle, including several hundred gems and ornamental stones, the more precious varieties represented by actual specimens or by models in glass, showing the exact color of the originals and the forms in which they are usually cut. There are similar models of the celebrated diamonds of the world, comprising fac-similes of fifteen historic gems, from the Polar Star, weighing 40 carats and belonging to the Russian princess Youssoupoff, to the Koh-i-noor of the British crown, and the immense stone in the possession of the Great Mogul, said to weigh 297 carats. Of meteorites there is a large collection, and another interesting exhibit is that which explains the structure of the earth in specimens and geological models, the latter showing not only the order of stratification, but the principal features of erosion and displacement.

The most noteworthy collections in the northeastern and northern galleries are those which consist of coal, coke, and petroleum. The northern entresol is mainly occupied by the Standard Oil company, which has transformed it into a pavilion, its walls and ceiling of a delicate cream color, with decorations in gold. At either end of the section is a minor pavilion, surmounted by a cupola, within whose colonnade is a female figure holding aloft a lamp of antique design. Along the front is a geological representation of the oil producing districts in New York and Pennsylvania, and against the windows at the rear is a large galley of beautiful transparencies showing the manufactories of the company in Philadelphia, Whiting, and Lima, and its facilities for piping and transporting by steamer and railroad. In one corner is a pyramid of miniature oil barrels, representing the daily product; elsewhere are models showing apparatus for refining, and everywhere are glass vessels filled with petroleum of various grades, and for many purposes. The collection of lamps ranges from the tiniest specimens to such as are used in lighthouses; and in one of the pavilions to which reference has been made are some magnificent specimens of richly ornamental metal and porcelain. In show-cases, built into the outer walls, are others of less elaborate design, with those typical of various

ALSEN'S CEMENT PAVILION, GERMAN DEPARTMENT

VENETIAN BOAT IN LAGOON

countries, one of the latter being an oil lamp used in northern India long before the Christian era.

In the northeastern galleries the Frick Coke company of Pennsylvania reproduces its plant in a series of models, a portion of the miniature machinery being operated by electric power. In the centre of the section is the name of the company, in letters of coke, and upon a huge pile of that material is the inscription "41,000 tons daily."

Many months ago a veteran miner, named Boyce, undertook the task of collecting, for exposition at the Fair, samples of coal from the great producing districts of the United States. The result is displayed in a large number of cubes, contained in cases, which form the enclosure of a small section adjacent to that of the Frick company. The greater portion of the space is occupied by a map of the United States painted upon panels of glass, and showing the location of mines which produce such varieties as gas, smithy, steam, coking, and domestic coals. All the cabinet specimens have numbers corresponding to those on the map, and thus the visitor may ascertain at a glance the varieties of coal produced in each locality.

Near by are many collective exhibits which here need only the briefest mention. Among them are building and ornamental stones, the New England states, New York, South Carolina, Iowa, Illinois, and Colorado showing samples of their granites and slates, while a firm doing business in the empire state has erected a pavilion for the display of Mexican and Californian onyx. Beyond this are all the substances known to manufacturers for grinding, abrading, and polishing, including emery, pumice, corundum, and a compound

MACHINERY HALL FROM THE COURT OF HONOR

COLUMBIAN CHAIR BOYS

known as carborundum, composed of silica and carbon combined by an electrical process. Wheels made of this substance are claimed to be the hardest of cutting apparatus, and are especially valuable for polishing diamonds.

In this vicinity are also various exhibits of graphite, and crucibles made of that substance, including collections from several of the oldest manufacturers in the United States. In one of the sections is a solid block of graphite from Ceylon, weighing more than 260 pounds. Cements, asphalts, and artificial stones are arranged in many attractive forms, several of them in ornate pavilions, as those of the Warren Chemical and Manufacturing company and the Barber Asphalt company, of New York, and the Acme Cement Plaster company, of Salina, Kansas. Samples of natural asphalt are shown from the lake of pitch on the island of Trinidad, with an artistic model of that natural curiosity. At the northern extremity of the eastern entresol is a comprehensive assortment of sulphur, saltpetre, brimstone, and mineral waters, mainly furnished by New York companies, with a large relief map of that state, and a smaller one of the West Indian isle of Navassa, noted for its extensive deposits of sulphate. Close at hand is the only collective exhibit of salts in the Mining hall, with specimens from New York, West Virginia, Ohio, Michigan, Kansas, Texas, Utah, Nevada, and California.

J. A. YERINGTON, NEVADA

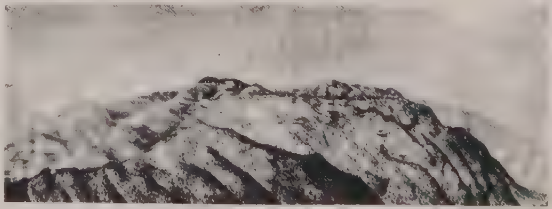
World's Fair Miscellany.—While, as in other departments, exhibitors, whether of machinery or processes, must be their manufacturers or inventors, they might be represented by an agent appointed for the purpose, subject to the approval of the director-general. With all specimens of ore must be given a brief description of their character and of the location of the deposit, with a rough analysis, and, at the discretion of the exhibitor, such other data as might be of general interest. No blocks of ore or coal must exceed three feet in diameter, except by special permission, and for slabs of marble, artificial stone, etc., the limit was four feet square of surface.

The 28,000 pound block of coal contained in the British section is said to have cost more than $5,000 to place it in the Mining hall, or at the rate of $357 a ton. To hew it out and hoist it to the surface was a nine months' task, rails being laid through the galleries of the mine, and a long steel car constructed to haul it to the shaft. Several tons of earth were removed from this specimen before it was forwarded to the Alexandra docks at Liverpool, and thence conveyed to Jackson park.

The silver contained in the statue of Justice in the Montana section was extracted from native ores at various smelting works throughout the state, the entire mass being melted in a crucible at Grand Crossing, and poured into a mold more than eight feet in length. To construct a mold which would reproduce an exact counterpart of the model, fashioned in plaster by Parks, and to cast the figure without flaw or blemish, was a task of no slight difficulty. This was finally accomplished during the month of March, though for several weeks before expert founders had been at work. The molten metal was carefully poured into the mold in the presence of a number of invited guests, among whom were the presidents of the National Commission and the Chicago board. The figure, swathed in cotton batting and woolen cloths, was brought to the Mining hall on a truck in a long, low, coffin-shaped box, and was thence removed by a derrick and fifteen stout laborers to the floor of the building, from which it was hauled by windlass and crow-bars to the Montana section. The statue was unveiled on the 30th of May.

In connection with the exhibit of diamonds from the Kimberley mines in Cape Colony, it may be mentioned that, since their discovery in 1867, several tons of diamonds have been exported from that country, representing a money value of $500,000,000. The field is now virtually absorbed by the De Beers company, which, for the four years ending June 30, 1892, produced 7,421,000 carats' weight of diamonds, worth more than $50,000,000, paying annual dividends of 10 to 12½ per cent on an invested capital of nearly $20,000,000. During the last of these years there were washed 3,240,000 loads of earth, yielding 3,035,000 carats, valued at about $19,000,000, the dividend declared amounting to nearly $2,500,000. While there are some large and valuable stones in the Cape Colony exhibit, none will bear comparison with the large orange-yellow, double-deck brilliant displayed in the Tiffany collection in Manufactures hall.

The deposit of rose-garnet, mentioned in connection with the Mexican exhibits, was discovered by one Niven of New York, a mineral prospector of scientific attainments. A specimen forwarded to New York was pronounced to be the best ornamental stone of modern times. In an article on the Columbian Exposition in the Berlin *Zeitung*, Julius Lessing describes it as "a gray marble containing garnet-red masses which have every appearance of costly inlaid mosaic work, all varieties of color, from deep red to the most delicate yellow and milk white, appearing in the same block." Laboratory tests have demonstrated its hardness, strength, resistance to extremes of temperature, and other valuable properties as a building stone.



VIEW OF THE WEST SIDE OF TREASURE HILL

After the close of the Fair it was intended to present the Idaho state collection of minerals to her university. An offer made for it by the university of Chicago was declined. The ruby sand, mentioned in the text as one of Idaho's exhibits, is contained in small vials, and came from the Neal district. At first sight it does not appear to differ from common sand, but when closely inspected red and brown particles are observed, shining like rubies. These form the metallic base of the earth known as zirconia, and are worth more than thrice their weight in gold. In Washington county, Idaho, there are places where zircon sand exists in paying quantities, and at Baltimore are the only works for its reduction.

(Continued from front flap)

set foot on the shores of the New World. In years hence it may be this Exposition will itself be deemed worthy of a celebration without other excuse than its merits.

The Exhibition itself was a work of art; in the selection or rather creation of the site, laying out the grounds, and placing the buildings, the artistic instinct was brought into play no less than in the architecture and decorations. Grounds and buildings in their general aspect were things of beauty, and have done more for art in America than a generation of teachings after the ordinary method. Art and architecture were baptized anew in the healthful atmosphere of our mid-continent. Nothing was done for a mere display of skill and ingenuity, but everywhere the marvelous was made subservient to the useful and reasonable.

Of the several world's fairs which have been held, little now remains in the way of description save what has been preserved in books. All that is left of this brilliant spectacle is in the minds of men and in printer's ink. Many of the beneficial effects will remain in garnered experiences and crystalizations of thought; much will be lost well worth preserving. This reproduction and record in book form exercises an influence for good throughout the centuries. In this age of ideas, which in the displays of the Exposition found fitting expression, how greatly is civilization indebted to the printer's art. It is in the earnest hope that this book will aid, like the Exposition itself, in promoting a broader sympathy and fellowship in humanity, and enable us somewhat further to fathom the undeveloped might of man.

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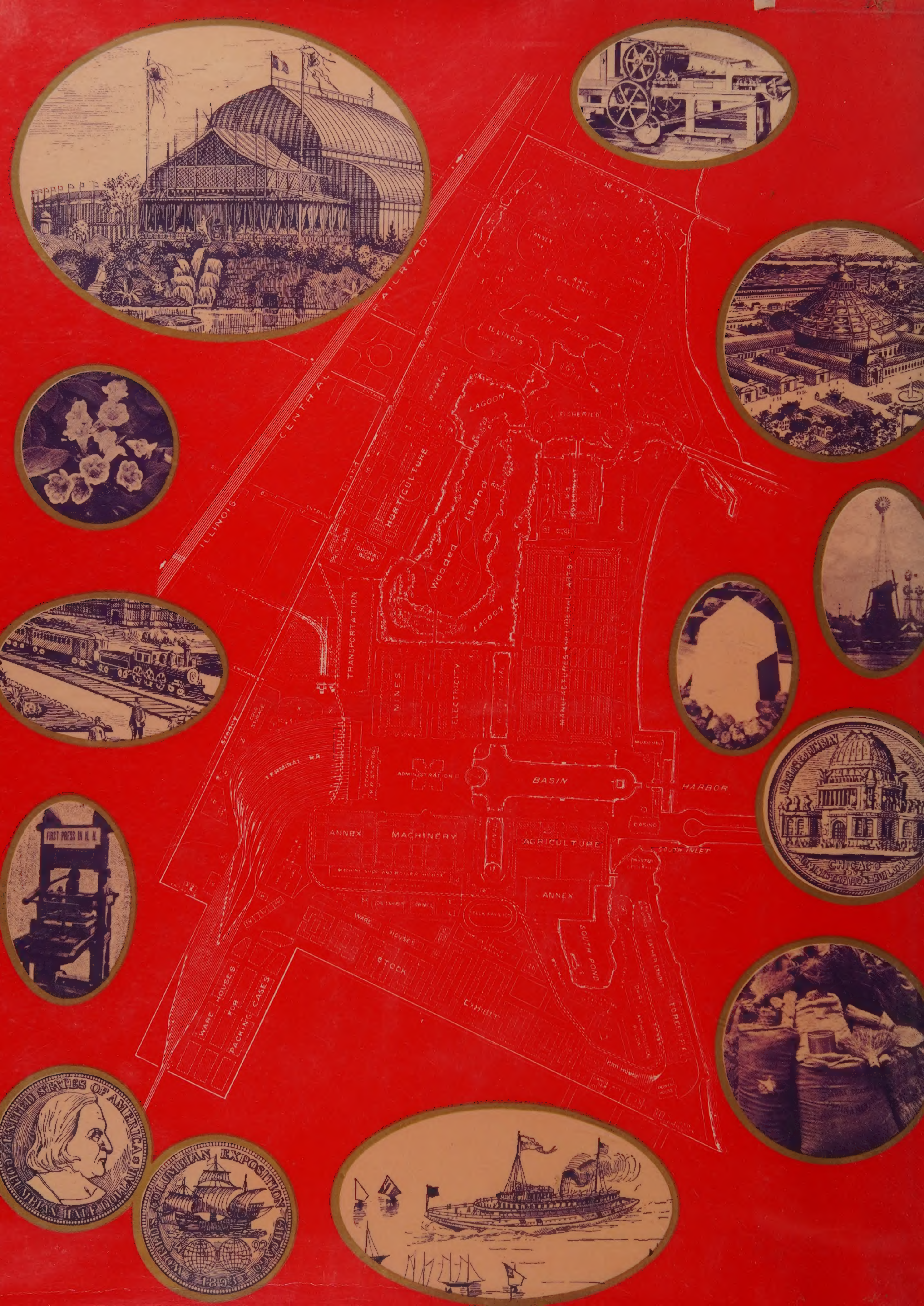
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